NEW WORLDS
SCIENCE FICTION

No. 65
VOLUME 22
2/-

★ SECTOR GENERAL by JAMES WHITE ★

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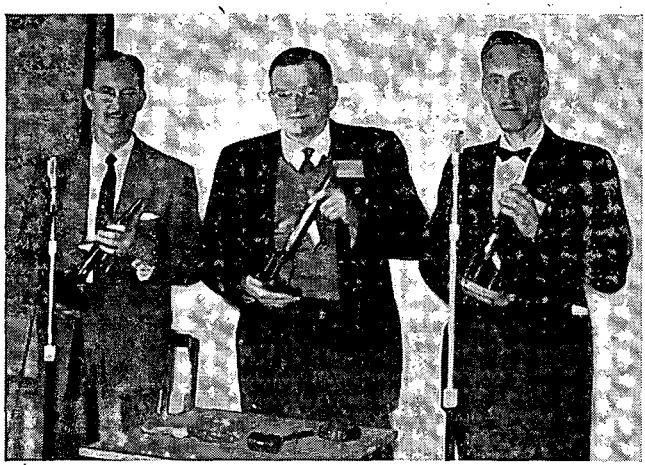
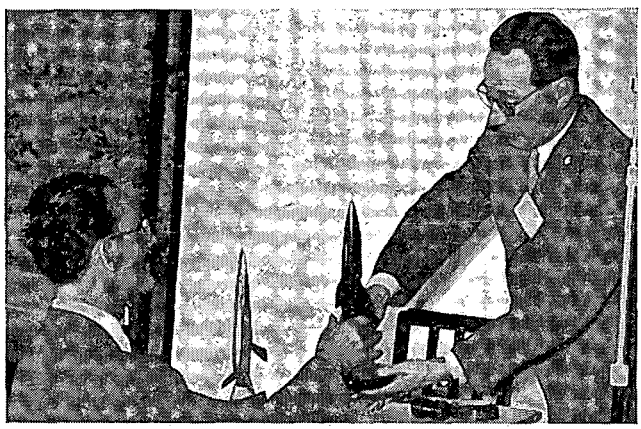


Presented at the recent 15th World Science Fiction Convention: l. to r. John Carnell for the British *New Worlds;* John W. Campbell, Jr. for the American *Astounding Science Fiction;* author John Victor Peterson on behalf of the American amateur *Science Fiction Times.*



Editor John Carnell receiving the trophy for *New Worlds Science Fiction* from author John Wyndham, Convention President.

Photos: Peter West

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NEW WORLDS SCIENCE FICTION

VOLUME 22

No. 65

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Editor : JOHN CARNELL

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Space Age, Year One

This Editorial is really an extension of Kenneth John's current article on the progress of I.G.Y., but such is the nature of production deadlines that up-to-the-minute news is almost impossible to incorporate in articles which are planned several months ahead.

As I write this, on what one newspaper reporter looking for a new angle has called "Space Age, Year One, Day 3," Man's first orbital satellite has just passed overhead on its fortieth revolution round the world, its radio chirpings now being as familiar as the Greenwich Time signal. These past few days have seen a veritable rash of feature articles on space flight and it is indeed a far cry from the days when science fiction and interplanetary travel were lampooned regularly in the press.

Still looking for angles, newspaperland has dubbed Russia's artificial moon as the "Moscow Mouse," the latter from the initials Minimum Orbital Unmanned Satellite Earth, and are still conjecturing just how long this prototype is likely to stay in its 560-mile high elliptical orbit above our atmosphere, estimates ranging from several weeks to as high as twenty years. I don't think the Russian scientists are going to worry about how long it stays up—bearing in mind that this must be a prototype and not the main type of satellite which will carry all the delicate equipment planned for the scientific investigation of the near reaches of outer space. The main thing they must have been concerned with was in getting the 23-inch sphere launched and in orbit. Having successfully done so they can now go ahead with the satellites proper—for there will obviously be more than one.

At 560 miles high there is no reason why the satellites should not stay in orbit for an indefinite period of time, but whereas the prototype's tiny radio transmitter is likely to fail after a few weeks and directional signals cease, future satellites will be equipped to draw power from the Sun and replenish the tiny batteries required to operate the miniature mass of accumulated apparatus within each sphere. They should be able to send a continuous stream of information back to Earth for many years to come.

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It should not have been any great surprise that the Russians are the first to conquer the Earth's gravitational pull—all the indications have pointed to such an event happening this year. In August they successfully fired a three-stage rocket (termed an Intercontinental Ballistics Missile) but this fact was lost in the welter of speculation as to how far such a missile could carry an atomic warhead. An ICBM was necessary to place a satellite in orbit above the Earth's atmosphere. Shortly after the Russians' success two attempts to successfully fire ICBM's by American scientists failed. Even before this the Americans had stated that they would not be ready to complete their satellite programme before 1958.

The fact that the Russians have been successful some six months or more before the American satellites are due to be launched proves how far advanced they are in the perfection of a three-stage rocket.

World politics are tending to obscure the fact that this Russian achievement is part of their planned I.G.Y. activities, as they stated it would be. The fact that no advance information was given regarding the experiment has inferred a sinister motive, yet it is feasible that the Russians have preferred to let deeds speak louder than words. At the moment few of the world's tracking posts are quite ready for the work of checking all the information due to be received from the satellites proper when they are set in orbit—it will be another two months before Great Britain can participate. By that time the Russians will probably have several satellites girdling the globe and the entire programme will settle into its proper perspective.

Whether the Russians were the first to conquer space or not is somewhat irrelevant (although this is one 'first' no nation on Earth can decry). The fact remains that the first step to the Moon and beyond *has* been taken and the addition of a fourth stage to the existing ICBM is all that is required to bridge the 240,000-mile gap to our own satellite. The least important item, however, is getting a rocket to the Moon—what is more important is guiding one out and back or placing electronic equipment on it's surface which will be self-operating. Then we shall be getting somewhere.

John Carnell

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This month's lead novelette is one of the most unusual and interesting plot ideas we have published for a long time. Undoubtedly, it is James White's most powerful story to date and could well form the basis of further plots built round an intergalactic hospital ship.

SECTOR GENERAL

By James White

Like a sprawling, misshapen Christmas tree the lights of Sector Twelve General Hospital blazed against the misty backdrop of the stars. From its view-ports shone lights that were yellow and red-orange and soft, liquid green, and others which were a searing actinic blue. There was darkness in places also. Behind these areas of opaque metal plating lay sections wherein the lighting was so viciously incandescent that the eyes of approaching ship's pilots had to be protected from it, or compartments which were so dark and cold that not even the light which filtered in from the stars could be allowed to penetrate to their inhabitants.

To the occupants of the Telfi ship which slid out of hyper-space to hang some twenty miles from this mighty structure, the garish display of visual radiation was too dim to be detected without the use of instruments. The Telfi were energy-eaters. Their ship's hull shone with a crawling blue glow of radioactivity and its interior was awash with a high level of hard radiation which was also in all respects normal. Only in the stern section of the tiny ship were the conditions not normal. Here the active core of a power pile lay scattered

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in small, sub-critical and unshielded masses throughout the ship's Planetary Engines room, and here it was too hot even for the Telfi.

The group-mind entity that was the Telfi spaceship Captain —*and* Crew—energised its short-range communicator and spoke in the staccato clicking and buzzing language used to converse with those benighted beings who were unable to merge into a Telfi gestalt.

" This is a Telfi hundred-unit gestalt," it said slowly and distinctly. " We have casualties and require assistance. Our Classification to one group is VTXM, repeat VTXM . . ."

" Details, please, and degree of urgency," said a voice briskly as the Telfi was about to repeat the message. It was translated into the same language used by the Captain. The Telfi gave details quickly, then waited. Around it and through it lay the hundred specialised units that were both its mind and multiple body. Some of the units were blind, deaf and perhaps even dead cells that received or recorded no sensory impressions whatever, but there were others who radiated waves of such sheer, excruciating agony that the group-mind writhed and twisted silently in sympathy. Would that voice never reply, they wondered, and if it did, would it be able to help them . . . ?

" You must not approach the Hospital nearer than a distance of five miles," said the voice suddenly. " Otherwise there will be danger to unshielded traffic in the vicinity, or to beings within the establishment with low radiation tolerance."

" We understand," said the Telfi.

" Very well," said the voice. " You must also realise that your race is too hot for us to handle directly. Remote controlled mechanisms are already on the way to you, and it would ease the problem of evacuation if you arranged to have your casualties brought as closely as possible to the ship's largest entry port. If this cannot be done, do not worry—we have mechanisms capable of entering your vessel and removing them."

The voice ended by saying that while they hoped to be able to help the patients, any sort of accurate prognosis was impossible at the present time.

The Telfi gestalt thought that soon the agony that tortured its mind and wide-flung multiple body would be gone, but so also would nearly one quarter of that body . . .

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With that feeling of happiness possible only with eight hours sleep behind, a comfortable breakfast within and an interesting job in front of one, Conway stepped out briskly for his wards. They were not really his wards, of course—if anything went seriously wrong in one of them the most he would be expected to do would be to scream for help. But considering the fact that he had been here only two months he did not mind that, or knowing that it would be a long time before he could be trusted to deal with cases requiring other than mechanical methods of treatment. Complete knowledge of any alien physiology could be obtained within minutes by Educator tape, but the skill to use that knowledge—especially in surgery came only with time. Conway was looking forward with conscious pride to spending his life acquiring that skill.

At an intersection Conway saw an FGLI he knew—a Tralthan intern who was humping his elephantine body along on six spongy feet. The stubby legs seemed even more rubbery than usual and the little OTSB who lived in symbiosis with it was practically comatose. Conway said brightly, "Good morning," and received a translated—and therefore necessarily emotionless—reply of "Drop dead." Conway grinned.

There had been considerable activity in and about Reception last evening. Conway had not been called, but it looked as though the Tralthan had missed both his recreation and rest periods.

A few yards beyond the Tralthan he met another who was walking slowly alongside a small DBDG like himself. Not entirely like himself, though—DBDG was the one-group classification which gave the grosser physical attributes, the number of arms, legs, heads, etc., and their placement. The fact that the being had seven-fingered hands, stood only four feet tall and looked like a very cuddly teddy-bear—Conway had forgotten the being's system of origin, but remembered being told that it came from a world which had suffered a sudden bout of glaciation which had caused its highest life-form to develop intelligence and a thick red fur coat—would not have shown up unless the Classification were taken to two or three groups. The DBDG had his hands clasped behind his back and was staring with vacant intensity at the floor. His hulking companion showed similar concentration, but favoured the ceiling because of the different position of his visual organs. Both wore their professional insignia on golden armbands, which meant that they were lordly Diagno-

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sticians, no less. Conway refrained from saying 'Good morning' to them as he passed, or from making undue noise with his feet.

Possibly they were deeply immersed in some medical problem, Conway thought, or equally likely, they had just had a tiff and were pointedly ignoring each other's existence. Diagnosticians were peculiar people. It wasn't that they were insane to begin with, but their job forced a form of insanity onto them.

At each corridor intersection annunciators had been pouring out an alien gabble which he had only half heard in passing, but when it switched suddenly to Terran English and Conway heard his own name being called, surprise halted him dead in his tracks.

". . . To Admittance Lock Twelve at once," the voice was repeating monotonously. "Classification VTXM-23. Dr. Conway, please go to Admittance Lock Twelve at once. A VTXM-23 . . ."

Conway's first thought was that they could not possibly mean him. This looked as if he was being asked to deal with a case—a big one, too, because the '23' after the classification code referred to the number of patients to be treated. And that Classification, VTXM, was completely new to him. Conway knew what the letters stood for, of course, but he had never thought that they could exist in that combination. The nearest he could make them was some form of telepathic species—the V prefixing the classification showed this as their most important attribute, and that mere physical equipment was secondary—who existed by the direct conversion of radiant energy, and usually as a closely co-operative group or gestalt. While he was still wondering if he was ready to cope with a case like this, his feet had turned and were taking him towards Lock Twelve.

His patients were waiting for him at the lock, in a small metal box heaped around with lead bricks and already loaded onto a powered stretcher carrier. The orderly standing told him briefly that the beings called themselves the Telfi, that preliminary diagnosis indicated the use of the Radiation Theatre, which was being readied for him, and that owing to the portability of his patients he could save time by calling with them to the Educator room and leaving them outside while he took his Telfi physiology tape.

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Conway nodded thanks, hopped onto the carrier and set it moving, trying to give the impression that he did this sort of thing every day.

In Conway's pleasurable but busy life with the highly unusual establishment that was Sector General there was only one sour note, and he met it again when he entered the Educator room: there was a Monitor in charge. Conway disliked Monitors. The presence of one affected him rather like the close proximity of a carrier of a contagious disease. And while Conway was proud of the fact that as a sane, civilised and ethical being he could never bring himself actually to hate anybody or anything, he disliked Monitors intensely. He knew, of course, that there were people who went off the beam sometimes, and that there had to be somebody who could take the action necessary to preserve the peace. But with his abhorrance of violence in any form, Conway could not like the men who took that action.

And what were Monitors doing in a hospital anyway?

The figure in neat, dark green coveralls seated before the Educator control console turned quickly at his entrance and Conway got another shock. As well as a Major's insignia on his shoulder, the Monitor wore the Staff and Serpents emblem of a Doctor!

"My name is O'Mara," said the Major in a pleasant voice. "I'm the Chief Psychologist of this madhouse. You, I take it, are Dr. Conway." He smiled.

It was a nice, friendly smile, but somehow it did not quite reach the eyes. The eyes made Conway feel uncomfortable because it was so obvious that they were remembering a great number of unpleasant things. Conway thought that you could mask every other feature and still tell a Monitor Corps man by the look in his eyes.

He made himself smile in return, knowing that it looked forced, and that the other knew it also.

"You want the Telfi tape," O'Mara said, a trifle less warmly. "Well, Doctor, you've picked a real weirdie this time. Be sure you get it erased as soon as possible after the job is done—believe me, this isn't one you'll want to keep. Thumb-print this and sit over there."

While the Educator head-band and electrodes were being fitted, Conway tried to keep his face neutral, and keep from flinching away from the Major's hard, capable hands. O'Mara's

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hair was a dull, metallic grey in colour, cut short, and his eyes also had the piercing qualities of metal. Those eyes had observed his reactions, Conway knew, and now an equally sharp mind was forming conclusions regarding them.

" Well, that's it," said O'Mara when finally it was all over. " But before you go, Doctor, I think you and I should have a little chat; a re-orientation talk, let's call it. Not now, though, you've got a case—but very soon."

Conway felt the eyes boring into his back as he left.

He should have been trying to make his mind a blank as he had been told to do, so the knowledge newly impressed there could bed down comfortably, but all Conway could think about was the fact that a Monitor was a high member of the hospital's permanent staff—and a Doctor, to boot. How could the two professions mix? Conway thought of the arm-band he wore which bore the Tralthan Black and Red Circle, the Flaming Sun of the chlorine-breathing Illensa and the intertwining Serpents and Staff of Earth—all the honoured symbols of Medicine of the three chief races of the Galactic Union. And here was this Dr. O'Mara whose collar said he was a healer and whose shoulder tabs said he was something else entirely.

One thing was now sure: Conway would never feel really content here again until he discovered why the Chief Psychologist of the hospital was a Monitor.

This was Conway's first experience of an alien physiology tape, and he noted with interest the mental double vision which had increasingly begun to affect his mind—a sure sign that the tape had ' taken.' By the time he had reached the Radiation Theatre he felt himself to be two people—an Earth-human called Conway and the great, five-hundred unit Telfi gestalt which had been formed to prepare a mental record of all that was known regarding the physiology of that race. That was the only disadvantage—if it was a disadvantage—of the Educator Tape system. Not only was knowledge impressed on the mind undergoing ' tuition,' the personalities of the entities who had possessed that knowledge was transferred as well. Small wonder then that the Diagnosticians, who held in their mind sometimes as many as ten different tapes, were a little bit queer.

A diagnostician had the most important job in the hospital, Conway thought as he donned radiation armour and readied

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his patients for the preliminary examination. He had sometimes thought in his more self-confident moments of becoming one himself. Their chief purpose was to perform original work in xenological medicine and surgery, using their tape-stuffed brains as a jumping-off ground, and to rally round, when a case arrived for which there was no physiology tape available, to diagnose and prescribe treatment.

Not for them were the simple, mundane injuries and diseases. For a Diagnostician to look at a patient that patient had to be unique, hopeless and at least three-quarters dead. When one did take charge of a case though, the patient was as good as cured—they achieved miracles with monotonous regularity.

With the lower orders of doctor there was always the temptation, Conway knew, to keep the contents of a tape rather than have it erased, in the hope of making some original discovery that would bring them fame. In practical, level-headed men like himself, however, it remained just that, a temptation.

Conway did not see his tiny patients even though he examined them individually. He couldn't unless he went to a lot of unnecessary trouble with shielding and mirrors to do so. But he knew what they were like, both inside and out, because the tape had practically made him one of them. That knowledge, taken together with the results of his examinations and the case history supplied him, told Conway everything he wanted to know to begin treatment.

His patients had been part of a Telfi gestalt engaged in operating an interstellar cruiser when there had been an accident in one of the power piles. The small, beetle-like and —individually—very stupid beings were radiation eaters, but that flare-up had been too much even for them. Their trouble could be classed as an extremely severe case of over-eating coupled with prolonged over-stimulation of their sensory equipment, especially of the pain centres. If he simply kept them in a shielded container and starved them of radiation—a course of treatment impossible on their highly radioactive ship—about seventy percent of them could be expected to cure themselves in a few hours. They would be the lucky ones, and Conway could even tell which of them came into that category. Those remaining would be a tragedy because if they did not suffer actual physical death their fate would

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be very much worse: they would lose the ability to join minds, and that in a Telfi was tantamount to being a hopeless cripple.

Only someone who shared the mind, personality and instincts of a Telfi, could appreciate the tragedy it was.

It was a great pity, especially as the case-history showed that it was these individuals who had forced themselves to adapt and remain operative during that sudden flare of radiation for the few seconds necessary to scatter the pile and so save their ship from complete destruction. Now their metabolism had found a precarious balance based on three times the Telfi normal energy intake. If this intake of energy was interrupted for any lengthy period of time, say a few more hours, the communications centres of their brains would suffer. They would be left like so many dismembered hands and feet, with just enough intelligence to know that they had been cut off. On the other hand, if their upped energy-intake was continued they would literally burn themselves out within a week.

But there was a line of treatment indicated for these unfortunates, the only one, in fact. As Conway prepared his servos for the work ahead he felt that it was a highly unsatisfactory line—a matter of calculated risks, of cold, medical statistics which nothing he could do would influence. He felt himself to be little more than a mechanic.

Working quickly, he ascertained that sixteen of his patients were suffering from the Telfi equivalent of acute indigestion. These he separated into shielded, absorbant bottles so that re-radiation from their still ' hot ' bodies would not slow the ' starving ' process. The bottles he placed in a small pile furnace set to radiate at Telfi normal, with a detector in each which would cause the shielding to fall away from them as soon as their excess radioactivity had gone. The remaining seven would require special treatment.

He had placed them in another pile, and was setting the controls to simulate as closely as possible the conditions which had obtained during the accident in their ship, when the nearby communicator beeped at him. Conway finished what he was doing, checked it, then said " Yes ?"

" This is Enquiries, Dr. Conway. We've had a signal from the Telfi ship asking about their casualties. Have you any news for them yet ?"

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Conway knew that his news was not too bad, considering, but he wished intensely that it could be better. The breaking up or modification of a Telfi gestalt once formed could only be likened to a death trauma to the entities concerned, and with the empathy which came as a result of absorbing their physiology tape Conway felt for them. He said carefully, "Sixteen of them will be good as new in roughly four hours time. The other seven will be fifty percent fatalities, I'm afraid, but we won't know which for another few days. I have them baking in a pile at over double their normal radiation requirements, and this will gradually be reduced to normal. Half of them should live through it. Do you understand?"

"Got you." After a few minutes the voice returned. It said, "The Telfi say that is very good, and thank you. Out."

He should have been pleased at dealing successfully with his first case, but Conway somehow felt let down. Now that it was over his mind felt strangely confused. He kept thinking that fifty percent of seven was three and a half, and what would they do with the odd half Telfi? He hoped that four would pull through instead of three, and that they would not be mental cripples. He thought that it must be nice to be a Telfi, to soak up radiation all the time, and the rich and varied impressions of a corporate body numbering perhaps hundreds of individuals. It made his body feel somehow cold and alone. It was an effort to drag himself away from the warmth of the Radiation Theatre.

Outside he mounted the carrier and left it back at the admittance lock. The right thing to do now was to report to the Educator room and have the Telfi tape erased—he had been ordered to do that, in fact. But he did not want to go; the thought of O'Mara made him intensely uncomfortable, even a little afraid. Conway knew that all Monitors made him feel uncomfortable, but this was different. It was O'Mara's attitude, and that little chat he had mentioned. Conway had felt small, as if the Monitor was his superior in some fashion, and for the life of him Conway could not understand how he could feel small before a lousy Monitor!

The intensity of his feelings shocked him; as a civilised, well-integrated being he should be incapable of thinking such thoughts. His emotions had verged upon actual hatred. Frightened, of himself this time, Conway brought his mind under a semblance of control. He decided to side-step the

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question and not report to the Educator room until after he had done the rounds of his wards. It was a legitimate excuse if O'Mara should query the delay, and the Chief Psychologist might leave or be called away in the meantime. Conway hoped so.

His first call was on an AUGL from Chalderescol II, the sole occupant of the ward reserved for that species. Conway climbed into the appropriate protective garment—a simple diving suit in this instance—and went through the lock into the tank of green, tepid water which reproduced the being's living conditions. He collected the instruments from the locker inside then loudly signalled his presence. If the Chalder was really asleep down there and he startled it the results could be serious. One accidental flick of that tail and the ward would contain two patients instead of one.

The Chaldor was heavily plated and scaled, and slightly resembled a forty-foot long crocodile except that instead of legs there was an apparently haphazard arrangement of stubby fins and a fringe of ribbon-like tentacles encircling its middle. It drifted limply near the bottom of the huge tank, the only sign of life being the periodic fogging of the water around its gills. Conway gave it a perfunctory examination—he was way behind time due to the Telfi job—and asked the usual question. The answer came through the water in some unimaginable form to Conway's Translator attachment and into his phones as slow, toneless speech.

"I am grievously ill," said the Chalder, "I suffer."

You lie, thought Conway silently, *in all six rows of your teeth*! Dr. Lister, Sector General's Director and probably the foremost Diagnostician of the day, had practically taken this Chalder apart. His diagnosis had been hypochondria and the condition incurable. He had further stated that the signs of strain in certain sections of the patient's body plating, and its discomfort in those areas, were due simply to the big so-and-so's laziness and gluttony. Anybody knew that an exoskeletal life-form could not put on weight except from inside! Diagnosticians were not noted for their bedside manners.

The Chalder became really ill only when it was in danger of being sent home, so the Hospital had acquired a permanent patient. But it did not mind. Visiting as well as Staff medics and psychologists had given it a going over, and continued to do so, also all the interns and nurses of all the multitudinous

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races represented on the hospital's staff. Regularly and at short intervals it was probed, pried into and unmercifully pounded by trainees of varying degrees of gentleness, and it loved every minute of it. The hospital was happy with the arrangement and so was the Chalder. Nobody mentioned going home to it anymore.

Conway paused for a moment as he swam to the top of the great tank; he felt peculiar. His next call was supposed to be on two methane-breathing life-forms in the low temperature ward of his section, and he felt strongly loath to go. Despite the warmth of the water and the heat of his exertions while swimming around his massive patient he felt cold, and he would have given anything to have a bunch of students come flapping into the tank just for the company. Usually Conway did not like company, especially that of trainees, but now he felt cut-off, alone and friendless. The feelings were so strong they frightened him. A talk with a Psychologist was definitely indicated, he thought, though not necessarily with O'Mara.

The construction of the hospital in this section resembled a heap of spaghetti—straight, bent and indescribably curved pieces of spaghetti. Each corridor containing an Earth-type atmosphere, for instance, was parallelled above, below and on each side—as well as being crossed above and below at frequent intervals—by others having different and mutually deadly variations of atmosphere, pressure and temperature. This was to facilitate the visiting of any given patient-species by any other species of doctor in the shortest possible time in case of emergency, because travelling the length of the hospital in a suit designed to protect a doctor against his patient's environment on arrival was both uncomfortable and slow. It had been found more efficient to change into the necessary protective suit outside the wards being visited, as Conway had done.

Remembering the geography of this section Conway knew that there was a short-cut he could use to get to his frigid-blooded patients—along the waterfilled corridor which led to the Chalder operating theatre, through the lock into the chlorine atmosphere of the Illensan PVSJ's and up two levels to the methane ward. This way would mean him staying in warm water for a little longer, and he was definitely feeling *cold*.

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A convalescent PVSJ rustled past him on spiny, membraneous appendages in the chlorine section and Conway found himself wanting desperately to talk to it, about anything. He had to force himself to go on.

The protective suit worn by DBDG's like himself while visiting the methane ward was in reality a small mobile tank. It was fitted with heaters inside to keep its occupant alive and refrigerators outside so that the leakage of heat would not immediately shrivel the patients to whom the slightest glow of radiant heat—or even light—was lethal. Conway had no idea how the scanner he used in the examinations worked—only those gadget-mad beings with the Engineering arm-bands knew that—except that it wasn't by infra-red. That also was too hot for them.

As he worked Conway turned the heaters up until the sweat rolled off him and still he felt cold. He was suddenly afraid. Suppose he had caught something? When he was outside in air again he looked at the tiny tell-tale that was surgically embedded on the inner surface of his fore-arm. His pulse, respiration and endocrine balance were normal except for the minor irregularities caused by his worrying, and there was nothing foreign in his bloodstream. What was wrong with him?

Conway finished his rounds as quickly as possible. He felt confused again. If his mind was playing tricks on him he was going to take the necessary steps to rectify the matter. It must be something to do with the Telfi tape he had absorbed. O'Mara had said something about it, though he could not remember exactly what at the moment. But he would go to the Educator room right away, O'Mara or no O'Mara.

Two Monitors passed him while he was on the way, both armed. Conway knew that he should feel his usual hostility towards them, also shock at they're being armed inside a hospital, and he did. But he also wanted to slap their backs or even hug them: he desperately wanted to have people around, talking and exchanging ideas and impressions so that he would not feel so terribly alone. As they drew level with him Conway managed to get out a shaky "Hello." It was the first time he had spoken first to a Monitor in his life.

One of the Monitors smiled slightly, the other nodded. Both gave him odd looks over their shoulders as they passed because his teeth were chattering so much.

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His intention of going to the Educator room had been clearly formed, but now it did not seem to be such a good idea. It was cold and dark there with all those machines and shaded lighting, and the only company might be O'Mara. Conway wanted to lose himself in a crowd, and the bigger the better. He thought of the nearby dining hall and turned towards it. then at an intersection he saw a sign reading "Diet Kitchen, Wards 52 to 68, Species DBDG, DBLF & FGLI." That made him remember how terribly cold he felt . . .

The Dietitians were too busy to notice him. Conway picked an oven which was fairly glowing with heat and lay down against it, letting the germ-killing ultra-violet which flooded the place bathe him and ignoring the charred smell given off by his light clothing. He felt warmer now, a little warmer, but the awful sense of being utterly and completely alone would not leave him. He was cut off, unloved and unwanted. He wished that he had never been born.

When a Monitor—one of the two he had recently passed whose curiosity had been aroused by Conway's strange behaviour—wearing a hastily borrowed heat suit belonging to one of the Cook-Dietitians got to him a few minutes later, the big, slow tears were running down Conway's cheeks . . .

" You," said a well-remembered voice, " are a very lucky and very stupid young man."

Conway opened his eyes to find that he was on the Erasure couch and that O'Mara and another Monitor were looking down at him. His back felt as though it had been cooked medium rare and his whole body stung as if with a bad dose of sunburn. O'Mara was glaring furiously at him, he spoke again :

" Lucky not to be seriously burned and blinded, and stupid because you forgot to inform me on one very important point, namely, that this was your first experience with the Educator . . ."

O'Mara's tone became faintly self-accusatory at this point, but only faintly. He went on to say that had he been thus informed he would have given Conway a hypno-treatment which would have enabled the doctor to differentiate between his own needs and those of the Telfi sharing his mind. He only realised that Conway was a first-timer when he filed the thumb-printed slip, and dammit how was he to know who was new and who wasn't in a place this size ! And anyway,

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if Conway had thought more of his job and less of the fact that a Monitor was giving him the tape, this would never have happened.

Conway, O'Mara continued bitingly, appeared to be a self-righteous bigot who made no pretence at hiding his feelings of defilement at the touch of an uncivilised brute of a Monitor. How a person intelligent enough to gain appointment to this hospital could also hold those sort of feelings was beyond O'Mara's understanding.

Conway felt his face burning. It had been stupid of him to forget to tell the psychologist that he was a first-timer. O'Mara could easily bring charges of personal negligence against him—a charge almost as serious as carelessness with a patient in a multi-environment hospital—and have Conway kicked out. But that possibility did not weigh too heavily with him at the moment, terrible though it was. What got him was the fact that he was being told off by a *Monitor*, and before another Monitor !

The man who must have carried him here was gazing down at him, a look of half-humourous concern in his steady brown eyes. Conway found that harder to take even than O'Mara's abusiveness. How dare a Monitor feel sorry for *him* !

". . . And if you're still wondering what happened," O'Mara was saying in withering tones, " you allowed—through inexperience, I admit—the Telfi personality contained in the tape to temporarily overcome your own. Its need for hard radiation, intense heat and light and above all the mental fusion necessary to a group-mind entity, became your needs—transferred into their nearest human equivalents, of course. For a while you were experiencing life as a single Telfi being, and an individual Telfi—cut off from all mental contact with the others of its group—is an unhappy beastie indeed."

O'Mara had cooled somewhat as his explanation proceeded. His voice was almost impersonal as he went on, " You're suffering from little more than a bad case of sunburn. Your back will be tender for a while and later it will itch. Serves you right. Now go away. I don't want to see you again until hour nine the day after tomorrow. Keep that hour free. That's an order—we have to have a little talk, remember ?"

Outside in the corridor Conway had a feeling of complete deflation coupled with an anger that threatened to burst out of all control—an intensely frustrating combination. In all

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his twenty-three years of life he could not remember being subjected to such extreme mental discomfort. He had been made to feel like a small boy—a bad, maladjusted small boy. Conway had always been a very good, well-mannered boy. It hurt.

He had not noticed that his rescuer was still beside him until the other spoke.

" Don't go worrying yourself about the Major," the Monitor said sympathetically. " He's really a nice man, and when you see him again you'll find out for yourself. At the moment he's tired and a bit touchy. You see, there are three companies just arrived and more coming. But they won't be much use to us in their present state—they're in a bad way with combat fatigue, most of 'em. Major O'Mara and his staff have to give them some psychological first aid before—"

" Combat fatigue," said Conway in the most insulting tone of which he was capable. He was heartily sick of people he considered his intellectual and moral inferiors either ranting at him or sympathizing with him. " I suppose," he added, " that means they've grown tired of killing people ?"

He saw the Monitor's young-old face stiffen and something that was both hurt and anger burn in his eyes. He stopped. He opened his mouth for an O'Mara-type blast of invective, then thought better of it. He said quietly, " For someone who has been here for two months you have, to put it mildly, a very unrealistic attitude towards the Monitor Corps. I can't understand that. Have you been too busy to talk to people or something ?"

" No," replied Conway coldly, " but where I come from we do not discuss persons of your type, we prefer pleasanter topics"

" I hope," said the Monitor, " that all your friends—if you have friends, that is—indulge in backslapping." He turned and marched off.

Conway winced in spite of himself at the thought of anything heavier than a feather hitting his scorched and tender back. But he was thinking of the other's earlier words, too. So his attitude towards Monitors was unrealistic ? Did they want him, then, to condone violence and murder and befriend those who were responsible for it ? And he had also mentioned the arrival of several companies of Monitors. Why ? What for ? Anxiety began to eat at the edges of his hitherto solid block of self-confidence. There was something here that he was missing, something important.

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When he had first arrived at Sector General the being who had given Conway his original instructions and assignments had added a little pep-talk. It had said that Dr. Conway had passed a great many tests to come here and that they welcomed him and hoped he would be happy enough in his work to stay. The period of trial was now over, and henceforth nobody would be trying to catch him out, but if for any reason—friction with his own or any other species, or the appearance of some xenological psychosis—he became so distressed that he could no longer stay, then with great reluctance he would be allowed to leave.

He had also been advised to meet as many different entities as possible and try to gain mutual understanding if not their friendship. Finally he had been told that if he should get into trouble through ignorance or any other reason, he should contact either of two Earth-human beings who were called O'Mara and Bryson, depending on the nature of his trouble, though a qualified being of any species would, of course, help him on request.

Immediately afterwards he had met the Surgeon-in-Charge of the wards to which he had been posted, a very able Earth-human called Mannon. Dr. Mannon was not yet a Diagnostician, though he was trying hard, and was therefore still quite human for long periods during the day. He was the proud possessor of a small dog which stuck so close to him that visiting extra-terrestrials were inclined to assume a symbiotic relationship. Conway liked Dr. Mannon a lot, but now he was beginning to realise that his superior was the only being of his own species towards whom he had any feeling of friendship.

That was a bit strange, surely. It made Conway begin to wonder about himself.

After that reassuring pep-talk Conway had thought he was all set—especially when he found how easy it was to make friends with the e-t members of the Staff. He had not warmed to his human colleagues—with the one exception—because of their tendancy to be flippant or cynical regarding the very important and worthwhile work he, and they, were doing. But the idea of friction developing was laughable.

That was before today, though, when O'Mara had made him feel small and stupid, accused him of bigotry and intolerance, and generally cut his ego to pieces. This, quite definitely, was friction developing, and if such treatment at the hands of

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Monitors continued Conway knew that he would be driven to leave. He was a civilised and ethical human being—why were the Monitors in a position to tell him off? Conway just could not understand it at all. Two things he did know, however; he wanted to remain at the hospital, and to do that he needed help.

The name 'Bryson' popped into his mind suddenly, one of the names he had been given should he get into trouble. O'Mara, the other name, was out, but this Bryson now . . .

Conway had never met anyone with that name, but by asking a passing Tralthan he received directions for finding him. He got only as far as the door, which bore the legend, "Captain Bryson, Monitor Corps, Chaplain," then he turned angrily away. Another Monitor! There was just one person left who might help him; Dr. Mannon. He should have tried him first.

But his superior, when Conway ran him down, was sealed in the LSVO theatre where he was assisting a Tralthan Surgeon-Diagnostician in a very tricky piece of work. He went up to the observation gallery to wait until Mannon had finished.

The LSVO came from a planet of dense atmosphere and negligible gravity. It was a winged life-form of extreme fragility, which necessitated the theatre being at almost zero gravity and the surgeons strapped to their position around the table. The little OTSB who lived in symbiosis with the elephantine Tralthan was not strapped down, but held securely above the operative field by one of its host's secondary tentacles—the OTSB life-form, Conway knew, could not lose physical contact with its host for more than a few minutes without suffering severe mental damage. Interested despite his own troubles, he began to concentrate on what they were doing.

A section of the patient's digestive tract had been bared, revealing a spongy, bluish growth adhering to it. Without the LSVO physiology tape Conway could not tell whether the patient's condition was serious or not, but the operation was certainly a technically difficult one. He could tell by the way Mannon hunched forward over it and by the tightly-coiled tentacles of the Tralthan not then in use. As was normal, the little OTSB with its cluster of wire-thin, eye- and sucker-tipped tentacles was doing the fine, exploratory work—sending infinitely detailed visual information of the field to

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its giant host, and receiving back instructions based on that data. The Tralthan and Dr. Mannon attended to the relatively crude work of clamping, tying-off and swabbing out.

Dr. Mannon had little to do but watch as the super-sensitive tentacles of the Tralthan's parasite were guided in their work by the host, but Conway knew that the other was proud of the chance to do even that. The Tralthan combination were the greatest surgeons the Galaxy had ever known. All surgeons would have been Tralthans had not their bulk and operating procedure made it impossible to treat certain forms of life.

Conway was waiting when they came out of the theatre. One of the Tralthan's tentacles flicked out and tapped Dr. Mannon sharply on the head—a gesture which was a high compliment—and immediately a small bundle of fur and teeth streaked from behind a locker towards the great being who was apparently attacking its master. Conway had seen this game played out many times and it still seemed wildly ludicrous to him. As Mannon's dog barked furiously at the creature towering above both itself and its master, challenging it to a duel to the death, the Tralthan shrank back in mock terror and cried, " Save me from this fearsome beast !" The dog, still barking furiously, circled it snapping at the leathery tegument protecting the Tralthan's six, blocky legs. The Tralthan retreated precipitously, the while calling loudly for aid and being very careful that its tiny attacker was not splattered under one of its elephantine feet. And so the sounds of battle receded down the corridor.

When the noise had diminished sufficiently for him to be heard, Conway said, " Doctor, I wonder if you could help me. I need advice, or at least information. But it's a rather delicate matter . . ."

Conway saw Dr. Mannon's eyebrows go up and a smile quirk the corners of his mouth. He said, " I'd be glad to help you, of course, but I'm afraid any advice I could give you at the moment would be pretty poor stuff." He made a disgusted face and flapped his arms up and down. " I've still got an LSVO tape working on me. You know how it is—half of me thinks I'm a bird and the other half is a little confused about it.

" But what sort of advice do you need ?" he went on, his head perking to one side in an oddly bird-like manner. " If

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it's that peculiar form of madness called young love, or any other psychological disturbance, I'd suggest you see O'Mara."

Conway shook his head quickly; anybody but O'Mara. He said, "No. It's more of a philosophical nature, a matter of ethics, maybe . . ."

"Is *that* all!" Mannon burst out. He was about to say something more when his face took on a fixed, listening expression. With a sudden jerk of his thumb he indicated a nearby wall annunciator. He said quietly, "The solution to your weighty problems will have to wait—you're wanted."

". . . Dr. Conway," the annunciator was saying briskly, "Go to room 87 and administer pep-shots . . ."

"But 87 isn't even in our section!" Conway protested. "What's going on here . . . ?"

Dr. Mannon had become suddenly grim. "I think I know," he said, "and I advise you to keep a few of those shots for yourself because you are going to need them." He turned abruptly and hurried off, muttering something about getting a fast erasure before they started screaming for him, too.

Room 87 was the Casualty Section's staff recreation room, and when Conway arrived its tables, chairs and even parts of its floor were asprawl with green-clad Monitors, some of whom had not the energy to lift their heads when he came in. One figure pushed itself out of a chair with extreme difficulty and weaved towards him. It was another Monitor with a Major's insignia on his shoulders and the Staff and Serpents on his collar. He said, "Maximum dosage. Start with me," and began shrugging out of his tunic.

Conway looked around the room. There must have been nearly a hundred of them, all in stages of advanced exhaustion and their faces showing that tell-tale grey colouration. He still did not feel well disposed towards Monitors, but these were, after a fashion, patients, and his duty was clear.

"As a doctor I advise strongly against this," Conway said gravely. "It's obvious that you've had pep-shots already—far too many of them. What you need is sleep—"

"Sleep?" said a voice somewhere. "What's that?"

"Quiet, Teirnan," said the Major tiredly, then to Conway; "And as a doctor I understand the risks. I suggest we waste no more time."

Rapidly and expertly Conway set about administering the shots. Dull-eyed, bone-weary men lined up before him and

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five minutes later left the room with a spring in their step and their eyes too bright with artificial vitality. He had just finished when he heard his name over the annunciator again, ordering him to Lock Six to await instructions there. Lock Six, Conway knew, was one of the subsidiary entrances to the Casualty section.

While he was hurrying in that direction Conway realised suddenly that he was tired and hungry, but he did not get the chance to think about it for long. The annunciators were giving out a call for all junior interns to report to Casualty, and directions for adjacent wards to be evacuated where possible to other accommodation. An alien gabble interspersed these messages as other species received similar instructions.

Obviously the Casualty section was being extended. But why, and where were all the casualties coming from ? Conway's mind was a confused and rather tired question mark.

At Lock Six a Tralthan Diagnostician was deep in conversation with two Monitors. Conway felt a sense of outrage at the sight of the highest and the lowest being so chummy together, then reflected with a touch of bitterness that nothing about this place could surprise him anymore. There were two more Monitors beside the Lock's direct vision panel.

" Hello, Doctor," one of them said pleasantly. He nodded towards the view-port. " They're unloading at Locks Eight, Nine and Eleven. We'll be getting our quota any minute now."

The big transparent panel framed an awesome sight: Conway had never seen so many ships together at one time. More than thirty sleek, silver needles, ranging from ten-man pleasure yachts to the gargantuan transports of the Monitor Corps wove a slowly, complicated pattern in and around each other as they waited permission to lock-on and unload.

" Tricky work, that," the Monitor observed.

Conway agreed. The repulsion fields which protected ships against collision with the various forms of cosmic detritus required plenty of space. Meteorite screens had to be set up a minimum of five miles away from the ship they protected if heavenly bodies large and small were to be successfully deflected from them—farther away if it was a bigger ship. But the ships outside were a mere matter of hundreds of yards

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apart, and had no collision protection except the skill of their pilots. The pilots would be having a trying time at the moment.

But Conway had little time for sight-seeing before three Earth-human interns arrived. They were followed quickly by two of the red-furred DBDG's and a caterpillar-like DBLF, all wearing medical insignia. There came a heavy scrape of metal against metal, the lock tell-tales turned from red to green indicating that a ship was properly connected up, and the patients began to stream through.

Carried in stretchers by Monitors they were of two kinds only: DBDG's of the Earth-human type and DBLF caterpillars. Conway's job, and that of the other doctors present, was to examine them and route them through to the proper department of Casualty for treatment. He got down to work, assisted by a Monitor who possessed all the attributes of a trained nurse except the insignia. He said his name was Williamson.

The sight of the first case gave Conway a shock—not because it was serious, but because of the nature of the injuries. The third made him stop so that his Monitor assistant looked at him questioningly.

"What sort of accident was this?" Conway burst out. "Multiple punctures, but the edge of the wounds cauterised. Lascerated punctures, as if from fragments thrown out by an explosion. How . . . ?"

The Monitor said, "We kept it quiet, of course, but I thought here at least the rumour would have got to everybody." His lips tightened and the look that identified all Monitors to Conway deepened in his eyes. "They decided to have a war," he went on, nodding at the Earth-human and DBLF patients around them. "I'm afraid it got a little out of control before we were able to clamp down."

Conway thought sickly, *A war . . . !* Human beings from Earth, or an Earth-seeded planet, trying to kill members of the species that had so much in common with them. He had heard that there were such things occasionally, but had never really believed any intelligent species could go insane on such a large scale. So many *casualties . . .*

He was not so bound up in his thoughts of loathing and disgust at this frightful business that he missed noticing a very strange fact—that the Monitor's expression mirrored his own! If Williamson thought that way about war, too, maybe it was time he revised his thinking about the Monitor Corps in general.

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A sudden commotion a few yards to his right drew Conway's attention. An Earth-human patient was objecting strenuously to the DBLF interne trying to examine him, and the language he was using was not nice. The DBLF was registering hurt bewilderment, though possibly the human had not sufficient knowledge of its physiognomy to know that, and trying to reassure the patient in flat, Translated tones.

It was Williamson who settled the business. He swung round on the loudly protesting patient, bent forward until their faces were only inches apart, and spoke in a low, almost conversational tone which nevertheless sent shivers along Conway's spine.

" Listen, friend," he said, " you say you object to one of the stinking crawlers that tried to kill you trying to patch you up, right ? Well, get this into your head, and keep it there—this particular crawler is a Doctor here. Also, in this establishment there are no wars. You all belong to the same army and the uniform is a night-shirt, so lay still, shut up and behave. Otherwise I'll clip you one."

Conway returned to work, underlining his mental note about revising his thinking regarding Monitors. As the torn, battered and burnt life-forms flowed past under his hands his mind seemed strangely detached from it all. He kept surprising Williamson with expressions on his face that seemed to give the lie to some of the things he had been told about Monitors. This tireless, quiet man with the rock-steady hands—was he a killer, a sadist of low intelligence and non-existent morals ? It was hard to believe. As he watched the Monitor covertly between patients, Conway gradually came to a decision. It was a very difficult decision. If he wasn't careful he would very likely get clipped.

O'Mara had been impossible, so had Bryson and Mannon for various reasons, but Williamson now . . .

" Ah . . . er, Williamson," Conway began hesitantly, then finished with a rush, " have you ever killed anybody ?"

The Monitor straightened suddenly, his lips a thin, bloodless line. He said tonelessly, " You should know better than to ask a Monitor that question, Doctor. Or should you ?" He hesitated, his curiosity keeping check on the anger growing in him because of the tangle of emotion which must have been mirrored on Conway's face, then said heavily, " What's eating you, Doc ?"

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Conway wished fervently that he had never asked the question, but it was too late to back out now. Stammering at first, he began to tell of his ideals of service and of his alarm and confusion on discovering that Sector General—an establishment which he had thought embodied all his high ideals—employed a Monitor as its Chief Psychologist, and probably other members of the Corps in positions of responsibility. Conway knew now that the Corps was not all bad, that they had rushed units of their Medical Division here to aid them during the present emergency. But even so, *Monitors* . . . !

" I'll give you another shock," Williamson said dryly, " by telling you something that is so widely known that nobody thinks to mention it. Dr. Lister, the Director, also belongs to the Monitor Corps.

" He doesn't wear uniform, of course," the Monitor added quickly, " because Diagnosticians grow forgetful and are careless about small things. The Corps frowns on untidiness, even in a Lieutenant-General."

Lister, a Monitor ! " But, *why* ?" Conway burst out in spite of himself. " Everybody knows what you are. How did you gain power here in the first place . . . ?"

" Everybody does not know, obviously," Williamson cut in, " because you don't, for one."

The Monitor was no longer angry, Conway saw as they finished with their current patient and moved to the next. Instead there was an expression on the other's face oddly reminiscent of a parent about to lecture an off-spring on some of the unpleasant facts of life.

" Basically," said Williamson as he gently peeled back a field dressing of a wounded DBLF, " your trouble is that you, and your whole social group, are a protected species."

Conway said, " *What* ?"

" A protected species," he repeated. " Shielded from the crudities of present-day life. From your social strata—on all the worlds of the Union, not only on Earth—come practically all the great artists, musicians and professional men. Most of you live out your lives in ignorance of the fact that you are protected, that you are insulated from childhood against the grosser realities of our interstellar so-called civilisation, and that your ideals of pacifism and ethical behaviour are a luxury which a great many of us simply cannot afford. You are allowed this luxury in the hope that from it may come a

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philosophy which may one day make every being in the Galaxy truly civilised, truly good."

"I didn't know," Conway stammered. "And . . . and you make us—me, I mean—look so useless . . ."

"Of course you didn't know," said Williamson gently. Conway wondered why it was that such a young man could talk down to him without giving offence; he seemed to possess *authority* somehow. Continuing, he said, "You were probably reserved, untalkative and all wrapped up in your high ideals. Not that there's anything wrong with them, understand, it's just that you have to allow for a little grey with the black and white.

"Our present culture," he went on, returning to the main line of discussion, "is based on maximum freedom for the individual. An entity may do anything he likes provided it is not injurious to others. Only Monitors forgo this freedom."

"What about the 'Normals' reservations?" Conway broke in. At last the Monitor had made a statement which he could definitely contradict. "Being policed by Monitors and confined to certain areas of country is not what I'd call freedom."

"If you think back carefully," Williamson replied, "I think you will find that the Normals—that is, the group on nearly every planet which thinks that, unlike the brutish Monitors and the spineless aesthetes of your own strata, it is truly representative of its species—are not confined. Instead they have naturally drawn together into communities, and it is in these communities of self-styled Normals that the Monitors have to be most active. The Normals possess all the freedom including the right to kill each other if that is what they desire, the Monitors being present only to see that any Normal not sharing this desire will not suffer in the process.

"We also, when a sufficiently high pitch of mass insanity overtakes one or more of these worlds, allow a war to be fought on a planet set aside for that purpose, generally arranging things so that the war is neither long or too bloody."

Williamson stopped, gave an explosive sigh and added a little self-consciously, "I do run on, don't I?"

Conway's mind was still baulking at this radically new slant on things. Before coming to the hospital he'd had no direct contact with Monitors, why should he? And the Normals of Earth he had found to be rather romantic figures, inclined to strut and swagger a bit, that was all. Of course, most of

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the bad things he had heard about Monitors had come from them. Maybe the Normals had not been as truthful or objective as they could have been . . .

"This is all too hard to believe," Conway protested. "You're suggesting that the Monitor Corps is greater in the scheme of things than either the Normals or ourselves, the professional class!" He shook his head angrily. "And anyway, this is a fine time for a philosophical discussion!"

"You," said the Monitor, "started it."

There was no answer to that.

It must have been hours later that Conway felt a touch on his shoulder and straightened to find a DBLF nurse behind him. The being was holding a hypodermic. It said, "Pep-shot, Doctor?"

All at once Conway realised how wobbly his legs had become and how hard it was to focus his eyes. And he must have been noticeably slowing down for the nurse to approach him in the first place. He nodded and rolled up his sleeve with fingers which felt like thick, tired sausages.

"Yipe!" he cried in sudden anguish. "What are you using, a six-inch nail?"

"I am sorry," said the DBLF, "but I have injected two doctors of my own species before coming to you, and as you know our tegument is thicker and more closely grained than is yours. The needle has therefore become blunted."

Conway's fatigue dropped away in seconds. Except for a slight tingling in hands and feet and a greyish blotching which only others could see in his face he felt as clear-eyed, alert and physically refreshed as if he had just come out of a shower after ten hours sleep. He took a quick look round before finishing his current examination and saw that here at least the number of patients awaiting attention had shrunk to a mere handful, and the number of Monitors in the room was less than half what it had been at the start. The patients were being taken care of, and the Monitors had become patients.

He had seen it happening all around him. Monitors who had had little or no sleep on the transports coming here, forcing themselves to carry on helping the overworked medics of the hospital with repeated pep-shots and sheer, dogged courage. One by one they had literally dropped in their tracks and been taken hurriedly away, so exhausted that the involuntary muscles of heart and lungs had given up with

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everything else. They lay in special wards with robot devices massaging their hearts, giving artificial respiration and feeding them through a vein in the leg. Conway had heard that only one of them had died.

Taking advantage of the lull Conway and Williamson moved to the direct vision panel and looked out. The waiting swarm of ships seemed only slightly smaller, though he knew that these must be new arrivals. He could not imagine where they were going to put these people—even the habitable corridors in the hospital were beginning to overflow now, and there was constant re-arranging of patients of all species to make more room. But that wasn't his problem, and the weaving pattern of ships was an oddly restful sight . . .

" Emergency," said the wall annunciator suddenly. "Single ship, one occupant, species as yet unknown requests immediate treatment. Occupant is in only partial control of its ship, is badly injured and communications are incoherent. Stand by at all admittance locks . . . !"

Oh, no, Conway thought, *not at a time like this* ! There was a cold sickness in his stomach and he had a horrible premonition of what was going to happen. Williamson's knuckles shone white as he gripped the edge of the view-port. " Look !" he said in a flat, despairing tone, and pointed.

An intruder was approaching the waiting swarm of ships at an insane velocity and on a wildly erratic course. A stubby, black and featureless torpedo shape, it reached and penetrated the weaving mass of ships before Conway had time to take two breaths. In milling confusion the ships scattered, narrowly avoiding collision both with it and each other, and still it hurtled on. There was only one ship in its path now, a Monitor transport which had been given the all-clear to approach and was drifting in towards an admittance lock. The transport was big, ungainly and not built for fast astrobatics—it had neither the time nor the ability to get out of the way. A collision was certain, and the transport was jammed with wounded . . .

But no. At the last possible instant the hurtling ship swerved. They saw it miss the transport and its stubby torpedo shape foreshorten to a circle which grew in size with heart-stopping rapidity. Now it was headed straight at them ! Conway wanted to shut his eyes, but there was a peculiar fascination about watching that great mass of metal rushing

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at him. Neither Williamson nor himself made any attempt to jump for a spacesuit—what was to happen was only split seconds away.

The ship was almost on top of them when it swerved again as its injured pilot sought desperately to avoid this greater obstacle, the hospital. But too late, the ship struck.

A smashing double-shock struck up at them from the floor as the ship tore through their double skin, followed by successively milder shocks as it bludgeoned its way into the vitals of the great hospital. A cacaphony of screams—both human and alien—arose briefly, also whistlings, rustlings and gutteral jabberings as beings were maimed, drowned, gassed or decompressed. Water poured into sections containing pure chlorine rendering both uninhabitable in the instant. A blast of ordinary air rushed through a gaping hole in the compartment whose occupants had never known anything but trans-Plutonian cold and vacuum—the beings shrivelled, died and dissolved horribly at the first touch of it. Water, air and a score of different atmospheric mixtures intermingled forming a sludgy, brown and highly corrosive mixture that steamed and bubbled its way out into space. But long before that had happened the air-tight seals had slammed shut, effectively containing the terrible wound made by that bulleting ship.

There was an instant of shocked paralysis, then the hospital reacted. Above their heads the annunciator went into a quiet, controlled frenzy. Engineers and Maintenancemen of all species were to report for assignment immediately. The gravity neutraliser grids in the LSVO and MSVK wards were failing—all medical staff in the area were to encase the patients in protective envelopes and transfer them to DBLF theatre Two, where one-twentieth G Conditions were being set up, before they were crushed by their own weight. There was an untraced leak in AUGL corridor Nineteen, and all DBDG's were warned of chlorine contamination in the area of their dining hall. Also, Dr. Lister was asked to report himself, please.

In an odd corner of his mind Conway noted how everybody else was ordered to their assignments while Dr. Lister was asked. Suddenly, he heard his name being called and he swung round.

It was Dr. Mannon. He hurried up to Williamson and Conway and said, " I see you're free at the moment. There's

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a job I'd like you to do." He paused to receive Conway's nod, then plunged on breathlessly.

When the crashing ship had dug a hole half-way through the hospital, Mannon explained, the volume sealed off by the safety doors was not confined simply to the tunnel of wreckage it had created. The position of the doors was responsible for this—the result being analogous to a great tree of vacuum extending into the hospital structure, with the tunnel created by the ship as its trunk and the open sections of corridors leading off it the branches. Some of these airless corridors served compartments which themselves could be sealed off, and it was possible that these might contain survivors.

Normally there would be no necessity to hurry the rescue of these beings, they would be quite comfortable where they were for days, but in this instance there was an added complication. The ship had come to rest near the centre—the nerve centre, in fact—of the hospital, the section which contained the controls for the artificial gravity settings of the entire structure. At the moment there seemed to be a survivor in that section somewhere—possibly a patient, a member of the Staff or even the occupant of the wrecked ship—who was moving around and unknowingly damaging the gravity control mechanisms. This state of affairs, if continued, could create havoc in the wards and might even cause deaths among the light-gravity life-forms.

Dr. Mannon wanted them to go in and bring the being concerned out before it unwittingly wrecked the place.

" A PVSJ has already gone in," Mannon added, " but that species is awkward in a spacesuit, so I'm sending you two as well to hurry things along. All right? Hop to it, then."

Wearing gravity neutralizer packs they exited near the damaged section and drifted along the Hospital's outer skin to the twenty-foot wide hole gouged in its side by the crashing ship. The packs allowed a high degree of manoeuvrability in weightless conditions, and they did not expect anything else along the route they were to travel. They also carried ropes and magnetic anchors, and Williamson—solely because it was part of the equipment issued with the Service Standard suit, he said—also carried a gun. Both had air for three hours.

At first the going was easy. The ship had sheared a clean-edged tunnel through ward bulkheads, deck plating and even through items of heavy machinery. Conway could see clearly

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into the corridors they passed in their descent, and nowhere was there a sign of life. There were grisly remnants of a high-pressure life-form which would have blown itself apart even under Earth-normal atmospheric conditions. When subjected suddenly to hard vacuum the process had been that much more violent. And in one corridor there was disclosed a tragedy; a near-human DBDG nurse—one of the red, bear-like entities—had been neatly decapitated by the closing of an air-tight door which it had just failed to make in time. For some reason the sight affected him more than anything else he had seen that day.

Increasing amounts of 'foreign' wreckage hampered their progress as they continued to descend—plating and structural members torn from the crashing ship—so that there were times when they had to clear a way through it with their hands and feet.

Williamson was in the lead—about ten yards below Conway, that was—when the Monitor flicked out of sight. In the suit radio a cry of surprise was abruptly cut off by the clang of metal against metal. Conway's grip on the projecting beam he had been holding tightened instinctively in shocked surprise, and he felt it vibrate through his gauntlets. The wreckage was shifting! Panic took him for a moment until he realised that most of the movement was taking place back the way he had come, above his head. The vibration ceased a few minutes later without the debris around him significantly changing its position. Only then did Conway tie his line securely to the beam and look around for the Monitor.

Knees bent and arms in front of his head Williamson lay face downward and partially embedded in a shelving mass of loose wreckage some twenty feet below. Faint, irregular sounds of breathing in his phones told Conway that the Monitor's quick thinking in wrapping his arms around his head had, by protecting his suit's fragile face-plate, saved his life. But whether or not Williamson lived for long or not depended on the nature of his other injuries, and they in turn depended on the amount of gravitic attraction in the floor section which had sucked him down.

It was now obvious that the accident was due to a square of deck in which the artificial gravity grid was, despite the wholesale destruction of circuits in the crash area, still operative. Conway was profoundly thankful that the attraction

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was exerted only at right angles to the grid's surface and that the floor section had been warped slightly. Had it been facing straight up then both the Monitor and himself would have dropped, and from a distance considerably greater than twenty feet.

Carefully paying out his safety line Conway approached the huddled form of Williamson. His grip tightened convulsively on the rope when he came within the field of influence of the gravity grid, then eased as he realised that its power was at most only one and a half G's. With a steady attraction now pulling him downwards towards the Monitor. Conway began lowering himself hand over hand. He could have used his neutralizer pack to counteract that pull, of course, and just drifted down, but that would have been risky. If he accidently passed out of the floor section's area of influence, then the pack would have flung him upwards again, with probably fatal results.

The Monitor was still unconscious when Conway reached him, and though he could not tell for sure, owing to the other wearing a spacesuit, he suspected multiple fractures in both arms. As he gently disengaged the limp figure from the surrounding wreckage it was suddenly borne on him that Williamson needed attention, immediate attention with all the resources the hospital could provide. He had just realised that the Monitor had been the recipient of a large number of pep-shots; his reserves of strength must be gone. When he regained consciousness, if he ever did, he might not be able to withstand the shock.

Conway was about to call through for assistance when a chunk of ragged-edged metal spun past his helmet. He swung round just in time to duck another piece of wreckage which was sailing towards him. Only then did he see the outlines of a non-human, spacesuited figure which was partially hidden in a tangle of metal about ten yards away. The being was throwing things at him !

The bombardment stopped as soon as the other saw that Conway had noticed it. With visions of having found the unknown survivor whose blundering about was playing hob with the hospital's artificial gravity system he hurried across to it. But he saw immediately that the being was incapable of doing any moving about at all, it was pinned down, but miraculously unhurt, by a couple of heavy structural members.

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It was also making vain attempts to reach round to the back of its suit with its only free appendage. Conway was puzzled for a moment, then he saw the radio pack which was strapped to the being's back, and the lead dangling loose from it. Using surgical tape he repaired the break and immediately the flat, Translated tones of the being filled his ear-phones.

It was the PVSJ who had left before them to search the wrecked area for survivors. Caught by the same trap which had snagged the unfortunate Monitor, it had been able to use its gravity pack to check its sudden fall. Overcompensating, it had crashed into its present position. The crash had been relatively gentle, but it had caused some loose wreckage to subside, trapping the being and damaging its radio.

The PVSJ—a chlorine-breathing Illensan—was solidly planted in the wreckage: Conway's attempts to free it were useless. While trying, however, he got a look at the professional insignia painted on the other's suit. The Tralthan and Illensan symbols meant nothing to Conway, but the third one —which was the nearest expression of the being's function in Earth-human terms—was a crucifix. The being was a padre. Conway might have expected that.

But now Conway had two immobilised cases instead of one. He thumbed the transmit switch of his radio and cleared his throat. Before he could speak the harsh, urgent voice of Dr. Mannon was dinning in his ears.

"Dr. Conway! Corpsman Williamson! One of you, report quickly, please!"

Conway said, "I was just going to," and gave an account of his troubles to date and requesting aid for the Monitor and the PVSJ padre. Mannon cut him off.

"I'm sorry," he said hurriedly, "but we can't help you. The gravity fluctuations have been getting worse here, they must have caused a subsidance in your tunnel, because it's solidly plugged with wreckage all the way above you. Maintenance men have tried to cut a way through but—"

"Let me talk to him," broke in another voice, and there were the magnified, fumbling noises of a mike being snatched out of someone's hand. "Dr. Conway, this is Dr. Lister speaking," it went on. "I'm afraid that I must tell you that the well-being of your two accident cases is of secondary importance. Your job is to contact that being in the gravity control compartment and stop him. Hit him on the head if necessary, but stop him—he's wrecking the hospital!"

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Conway swallowed. He said, " Yes, sir," and began looking for a way to penetrate further into the tangle of metal surrounding him. It looked hopeless.

Suddenly he felt himself being pulled sideways. He grabbed for the nearest solid looking projection and hung on for dear life. Transmitted through the fabric of his suit he heard the grinding, tearing jangle of moving metal. The wreckage was shifting again. Then the force pulling him disappeared as suddenly as it had come and simultaneously there came a peculiar, barking cry from the PVSJ. Conway twisted round to see that where the Illensan had been a large hole led downward into nothingness.

He had to force himself to let go of his handhold. The attraction which had seized him had been due, Conway knew, to the momentary activating of an artificial gravity grid somewhere below. If it returned while he was floating unsupported . . . Conway did not want to think about that.

The shift had not affected Williamson's position—he still lay as Conway had left him—but the PVSJ must have fallen through.

" Are you all right ?" Conway called anxiously.

" I think so," came the reply. " I am still comewhat numb."

Cautiously, Conway drifted across to the newly-created opening and looked down. Below him was a very large compartment, well-lit from a source somewhere off to one side. Only the floor was visible about forty feet below, the walls being beyond his angle of vision and this was thickly carpeted by a dark blue, tubular growth with bulbous leaves. The purpose of this compartment baffled Conway until he realised that he was looking at the AUGL tank minus its water. The thick, flaccid growth covering its floor served both as food and interior decoration for the AUGL patients. The PVSJ had been very lucky to have such a springy surface to land on.

The PVSJ was no longer pinned down by wreckage and it stated that it felt fit enough to help Conway with the being in the gravity control compartment. As they were about to resume the descent Conway glanced towards the source of light he had half-noticed earlier, and caught his breath.

One wall of the AUGL tank was transparent and looked out on a section of corridor which had been converted into a temporary ward. DBLF caterpillars lay in the beds which lined one side, and they were by turns crushed savagely into

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the plastifoam and bounced upwards into the air by it as violent and random fluctuations rippled along the gravity grids in the floor. Netting had been hastily tied around the patients to keep them in the beds, but despite the beating they were taking they were the lucky ones.

A ward was being evacuated somewhere and through this stretch of corridor there crawled, wriggled and hopped a procession of beings resembling the contents of some cosmic Ark. All the oxygen-breathing life-forms were represented together with many who were not, and human nursing orderlies and Monitors shepherded them along. Experience must have taught the orderlies that to stand or walk upright was asking for broken bones and cracked skulls, because they were crawling along on their hands and knees. When a sudden surge of three or four G's caught them they had a shorter distance to fall that way. Most of them were wearing gravity packs, Conway saw, but had given them up as useless in conditions where the gravity constant was a wild variable.

He saw PVSJ's in balloon-like chlorine envelopes being pinned against the floor, flattened like specimens pressed under glass, then bounced into the air again. And Tralthan patients in their massive, unwieldy harnesses—Tralthans were prone to injury internally despite their great strength—being dragged along. There were DBDG's, DBLF's and CLSR's, also unidentifiable somethings in spherical, wheeled containers that radiated cold almost visibly. Strung out in a line, being pushed, dragged or manfully inching along on their own, the beings crept past, bowing and straightening up again like wheat in a strong wind as the gravity grids pulled at them.

Conway could almost imagine he felt those fluctuations where he stood, but knew that the crashing ship must have destroyed the grid circuits in its path. He dragged his eyes away from that grim procession and headed downwards again.

" Conway !" Mannon's voice barked at him a few minutes later. " That survivor down there is responsible for as many casualties now as the crashed ship ! A ward of convalescent LSVO's are dead due to a three-second surge from one-eighth to four gravities. What's happening now ?"

The tunnel of wreckage was steadily narrowing, Conway reported, the hull and lighter machinery of the ship having been peeled away by the time it had reached their present level. All that could remain ahead was the massive stuff like

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hyperdrive generators and so on. He thought he must be very near the end of the line now, and the being who was the unknowing cause of the devastation around them.

" Good," said Mannon, " but hurry it up !"

" But can't the Engineers get through ? Surely—"

" They can't," broke in Dr. Lister's voice. " In the area surrounding the gravity grid controls there are fluctuations of up to ten G's. It's impossible. And joining up with your route from inside the hospital is out, too. It would mean evacuating corridors in the neighbouring area, and the corridors are all filled with patients . . ." The voice dropped in volume as Dr. Lister apparently turned away from the mike, and Conway overheard him saying, " Surely an intelligent being could not be so panic-stricken that it . . . it . . . Oh, when I get my hands on it—"

" It may not be intelligent," put in another voice. " Maybe it's a cub, from the FGLI maternity unit . . ."

" If it is I'll tan its little—"

A sharp click ended the conversation at that point as the transmitter was switched off. Conway, suddenly realising what a very important man he had become, tried to hurry it up as best he could.

They dropped another level into a ward in which four MSVK's—fragile, tri-pedal storklike beings—drifted lifeless among loose items of ward equipment. Movements of the bodies and objects in the room seemed a little unnatural, as if they had been recently disturbed. It was the first sign of the enigmatic survivor they were seeking to appear. Then they were in a great, metal-walled compartment, surrounded by a maze of plumbing and unshielded machinery. On the floor in a bulge it had created for itself, the ship's massive hyper-drive generator lay with some shreds of control-room equipment strewn around it. Underneath was the remains of a life-form that was now unclassifiable. Beside the generator another hole had been torn in the severely weakened floor by some other piece of the ship's heavy equipment.

Conway hurried over to it, looked down, then called excitedly, " There it is !"

They were looking into a vast room which could only be the grid control centre. Rank upon rank of squat, metal cabinets covered the floor, walls and ceiling—this compartment was always kept airless and at zero gravity—with barely

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room for even Earth-human Engineers to move between them. But Engineers were seldom needed here because the devices in this all-important compartment were self-repairing. At the moment this ability was being put to a severe test.

A being which Conway classified tentatively as AACL sprawled across three of the delicate control cabinets. Nine other cabinets, all winking with red distress signals, were within range of its six, python-like tentacles which poked through seals in the cloudy plastic of its suit. The tentacles were at least twenty feet long and tipped with a horny substance which must have been steel-hard considering the damage the being had caused.

Conway had been prepared to feel pity for this hapless survivor, he had expected to find an entity injured, panic-stricken and crazed with pain. Instead there was a being who appeared unhurt and who was viciously smashing up gravity-grid controls as fast as the built-in self-repairing robots tried to fix them. Conway swore and began hunting for the frequency of the other's suit radio. Suddenly there was a harsh, high-pitched cheeping sound in his ear-phones. " Got you !" Conway said grimly.

The cheeping sounds ceased abruptly as the other heard his voice and so did all movement of those highly destructive tentacles. Conway noted the wavelength, then switched back to the band used by the PVSJ and himself.

" It seems to me," said the chlorine-breather when he had told it what he had heard, " that the being is deeply afraid, and the noises it made were of fear—otherwise your Translator would have made you receive them as words in your own language. The fact that these noises and its destructive activity stopped when it heard your voice is promising, but I think that we should approach slowly and reassure it constantly that we are bringing help. Its activity down there gives me the impression that it has been hitting out at anything which moves, so a certain amount of caution is indicated, I think."

" Yes, Padre," said Conway with great feeling.

" We do not know in what direction the being's visual organs are directed," the PVSJ went on, " so I suggest we approach from opposite sides."

Conway nodded. They set their radios to the new band and climbed carefully down onto the ceiling of the compartment below. With just enough power in their gravity neutra-

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lisers to keep them pressed gently against the metal surface they moved away from each other onto opposite walls, down them, then onto the floor. With the being between them now, they moved slowly towards it.

The robot repair devices were busy making good the damage wrecked by those six anacondas it used for limbs but the being continued to lie quiesent, neither did it speak. Conway kept thinking of the havoc this entity had caused with its senseless threshing about. The things he felt like saying to it were anything but reassuring, so he let the PVSJ padre do the talking.

" Do not be afraid," the other was saying for the twentieth time. " If you are injured, tell us. We are here to help you . . ."

But there was neither movement nor reply from the being.

On a sudden impulse Conway switched to Dr. Mannon's band. He said quickly, " The survivor seems to be an AACL. Can you tell me what it's here for, or any reason why it should refuse or be unable to talk to us ?"

" I'll check with Reception," said Mannon after a short pause. " But are you sure of that classification ? I can't remember seeing an AACL here, sure it isn't a Creppelian—"

" It isn't a Creppelian octopoid," Conway cut in. " There are *six* main appendages, and it is just lying here doing nothing . . ."

Conway stopped suddenly, shocked into silence, because it was no longer true that the being under discussion was doing nothing. It had launched itself towards the ceiling, moving so fast that it seemed to land in the same instant that it had taken off. Above him now, Conway saw another control unit pulverised as the being struck and others torn from their mounts as its tentacles sought anchorage. In his phones Mannon was shouting about gravity fluctuations in a hitherto stable section of the hospital, and mounting casualty figures, but Conway was unable to reply.

He was watching helplessly as the AACL prepared to launch itself again.

". . . We are here to help you," the PVSJ was saying as the being landed with a soundless crash four yards from the padre. Five great tentacles anchored themselves firmly, and a sixth lashed out in a great, curving blur of motion that caught the PVSJ and smashed it against the wall. Life-giving chlorine spurted from the PVSJ's suit, momentarily hiding in

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mist the shapeless, pathetic thing which rebounded slowly into the middle of the room. The AACL began making cheeping noises again.

Conway heard himself babbling out a report to Mannon, then Mannon shouting for Lister. Finally the Director's voice came to him. It said thickly, " You've got to kill it, Conway."

You've got to kill it, Conway !

It was those words which shocked Conway back to a state of normality as nothing else could have done. How very like a Monitor, he thought bitterly, to solve a problem with a murder. And to ask a doctor, a person dedicated to the preserving of life, to do the killing. It did not matter that the being was insane with fear, it had caused a lot of trouble in the hospital, so kill it.

Conway had been afraid, he still was. In his recent state of mind he might have been panicked into using this kill-or-be-killed law of the jungle. Not now, though. No matter what happened to him or the hospital he would not kill an intelligent fellow being, and Lister could shout himself blue in the face . . .

It was with a start of surprise that Conway realised that both Lister and Mannon were shouting at him, and trying to counter his arguments. He must have been doing his thinking aloud without knowing it. Angrily he tuned them out.

But there was still another voice gibbering at him, a slow, whispering, unutterably weary voice that frequently broke off to gasp in pain. For a wild moment Conway thought that the ghost of the dead PVSJ was continuing Lister's arguments, then he caught sight of movement above him.

Drifting gently through the hole in the ceiling was the spacesuited figure of Williamson. How the badly injured Monitor had got there at all was beyond Conway's understanding—his broken arms made control of his gravity pack impossible, so that he must have come all that way by kicking with his feet and trusting that a still-active gravity grid would not pull him in a second time. At the thought of how many times those multiply fractured members must have collided with obstacles on the way down, Conway cringed. And yet all the Monitor was concerned with was trying to coax Conway into killing the AACL below him.

Close below him, with the distance lessening every second . . .

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Conway felt the cold sweat break out on his back. Helpless to stop himself, the injured Monitor had cleared the rent in the ceiling and was drifting slowly floorwards, *directly on top of the crouching AACL* ! As Conway stared fascinated one of the steel-hard tentacles began to uncurl preparatory to making a death-dealing swipe.

Instinctively Conway launched himself in the direction of the floating Monitor, there was no time for him to feel consciously brave—or stupid—about the action. He connected with a muffled crash and hung on, wrapping his legs around Williamson's waist to leave his hands free for the gravity pack controls. They spun furiously around their common centre of gravity, walls, ceiling and floor with its deadly occupant whirling round so fast that Conway could barely focus his eyes on the controls. It seemed years before he finally had the spin checked and he had them headed for the hole in the ceiling and safety. They had almost reached it when Conway saw the hawser-like tentacle come sweeping up at him . . .

Something smashed into his back with a force that knocked the breath out of him. For a heart-freezing moment he thought his air-tanks had gone, his suit torn open and that he was already sucking frenziedly at vacuum. But his gasp of pure terror brought air rushing into his lungs. Conway had never known canned air to taste so good.

The AACL's tentacle had only caught him a glancing blow —his back wasn't broken—and the only damage was a wrecked suit radio.

"Are you all right ?" Conway asked anxiously when he had Williamson settled in the compartment above. He had to press his helmet against the other's—that was the only way he could make himself heard now.

For several minutes there was no reply, then the weary, pain-racked near-whisper returned.

" My arms hurt. I'm tired," it said haltingly. " But I'll be OK when . . . they take me . . . inside." Williamson paused, his voice seemed to gather strength from somewhere and he went on, " That is if there is anybody left alive in the hospital to treat me. If you don't stop our friend down there . . ."

Sudden anger flared in Conway. " Dammit, do you never give up ?" he burst out. " Get this, I'm not going to kill an intelligent being ! My radio's gone so I don't have to listen

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to Lister and Mannon yammering at me, and all I've got to do to shut you up is pull my helmet away from yours."

The Monitor's voice had weakened again. He said, "I can still hear Mannon and Lister. They say the wards in Section Eight have been hit now—that's the other low-gravity section. Patients and doctors both are pinned flat to the floor under three G's. A few more minutes like that and they'll never get up—MSVK's aren't at all sturdy, you know . . ."

"Shut up!" yelled Conway. Furiously, he pulled away from contact.

When his anger had abated enough for him to see again, Conway observed that the Monitor's lips were no longer moving. Williamson's eyes were closed, his face grey and sweaty with shock and he did not seem to be breathing. The drying chemicals in his helmet kept the face-plate from fogging, so that Conway could not tell for sure but the Monitor could very easily be dead. With exhaustion held off by repeated pep-shots, then his injuries on top of that, Conway had expected him to be dead long since. For some peculiar reason Conway felt his eyes stinging.

He had seen so much death and dismemberment over the last few hours that his sensitivity to suffering in others had been blunted to the point where he reacted to it merely as a medical machine. This feeling of loss, of bereavement, for the Monitor must be simply a resurgence of that sensitivity, and temporary. Of one thing he was sure, however, nobody was going to make this medical machine commit a murder. The Monitor Corps, Conway now knew, was responsible for a lot more good than bad, but he was not a Monitor.

Yet O'Mara and Lister were both Monitors and Doctors, one of them renowned throughout the Galaxy. Are you better than they are? a little voice nagged in his mind somewhere. And you're all alone now, it went on, with the hospital disorganised and people dying all over the place because of that being down there, what do you think your chances of survival are? The way you came is plugged with wreckage and nobody can come to your aid, so you're going to die, too. Isn't that so?

Desperately Conway tried to hang on to his resolution, to draw it tightly around him like a shell. But that insistant, that cowardly, voice in his brain was putting cracks in it. It was with a sense of pure relief that he saw the Monitor's lips moving again. He touched helmets quickly.

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". . . Hard for you, a Doctor," the voice came faintly, " but you've got to. Just suppose you were that being down below, driven mad with fear and pain maybe, and for a moment you became sane and somebody told you what you had done—what you were doing, and the deaths you had caused . . ." The voice wavered, sank, then returned. " Wouldn't you *want* to die rather than go on killing . . . ?"

" But I *can't* . . . !"

" Wouldn't you *want* to die, in its place ?"

Conway felt the defensive shell of his resolution begin to disintegrate around him. He said desperately, in a last attempt to hold firm, to stave off the awful decision, " Well, maybe, but I couldn't kill it even if I tried—it would tear me to pieces before I got near it . . ."

" I've got a gun," said the Monitor.

Conway could not remember adjusting the firing controls, or even taking the weapon from the Monitor's holster. It was in his hand and trained on the AACL below, and Conway felt sick and cold. But he had not given in to Williamson completely. Near at hand was a sprayer of the fast-setting plastic which, when used quickly enough, could sometimes save a person whose suit had been holed. Conway planned to wound the being, immobilise it, then re-seal its suit with cement. It would be a close thing and risky to himself, but he would not deliberately kill the being.

Carefully he brought his other hand up to steady the gun and took aim. He fired.

When he lowered it there was not much left except shredded twitching pieces of tentacles scattered all over the room. Conway wished now that he had known more about guns, known that this one shot explosive bullets, and that it had been set for continuous automatic fire . . .

Williamson's lips were moving again. Conway touched helmets out of pure reflex. He was past caring about anything any more.

". . . It's all right, Doctor," the Monitor was saying. " It isn't anybody . . ."

" It isn't anybody now," Conway agreed. He went back to examining the Monitor's gun and wishing that it wasn't empty. If there had been one bullet left, just one, he knew how he would have used it.

Of course he could always open his face-plate.

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" It was hard, we know that," said Major O'Mara. The rasp was no longer in his voice and the iron-grey eyes were soft with sympathy, and something akin to pride. " A doctor doesn't have to make a decision like that usually until he's older, more balanced, mature, if ever. You are, or were, just an over-idealistic kid—a bit on the smug and self-righteous side maybe—who didn't even know what a Monitor really was."

O'Mara smiled. His two big, hard hands rested on Conway's shoulders in an oddly fatherly gesture. He went on, " Doing what you forced yourself to do could have ruined both your career and your mental stability. But it doesn't matter, you don't have to feel guilty about a thing. Everything's all right."

Conway wished dully that he had opened his face-plate and ended it all before those Engineers had swarmed into the gravity grid control room and carried Williamson and himself off to O'Mara. O'Mara must be mad. He, Conway, had violated the prime ethic of his profession and killed an intelligent being. Everything most definitely was not all right.

" Listen to me," O'Mara said seriously. " The Communications boys managed to get a picture of the crashed ship's control room, with the occupant in it, before it hit. The occupant was not your AACL, understand ? It was an AMSO, one of the bigger life-forms who are in the habit of keeping a non-intelligent AACL-type creature as pets. Also, there are no AACL's listed in the hospital, so the beastie you killed was simply the equivalent of a fear-maddened dog in a protective suit." O'Mara shook Conway's shoulders until his head wobbled. " Now do you feel better ?"

Conway felt himself coming alive again. He nodded wordlessly. He felt wonderful !

" You can go now," O'Mara said, smiling dismissal, " and catch up on your sleep."

Conway hesitated at the door. He said, " Er, ah, about that re-orientation talk. Williamson was, uh, explaining some things to me—"

" Out ! Get out !" cried O'Mara with a mock-ferocious scowl. " I don't want to see you again at all, unless there's something seriously wrong with you. Like seeing pink Tralthans, for instance . . . ."

James White

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MANHOLE 69

Each successive story we publish by Mr. Ballard shows that he is fast becoming one of Britain's most promising new writers. This month we present one of the most powerful stories yet published in this country and one which will long be talked about by science fiction readers.

By J. G. Ballard

For the first few days it was fairly easy.

"Keep away from windows and don't think about it," Dr. Neill told them. "As far as you're concerned it was just another compulsion. At 11-30 or 12-0 go down to the gym and throw a ball around, play some table tennis. At 2-0 they're running a movie for you in the Neuro theatre. Read the papers for a couple of hours, put on some records. I'll be down at 6-0 and tap off those amino-residues. By 7-0 you'll be in a manic swing."

"Any chance of a sudden black-out, Doctor?" Avery asked.

"Absolutely none," Neill said. "If you get tired, rest of course. That's the one thing you'll probably have a little

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difficulty getting used to. Remember, you're still burning off only 3,500 calories, so your kinetic level—and you'll notice this most by day—will be about a third lower. You'll have to take things easier, make allowances. Most of these have been programmed in for you, but start learning to play chess, focus that inner eye."

Gorrell leaned forward. "Doctor," he asked, "if we want to, can we look out of the windows?"

Dr. Neill smiled. "Don't worry," he said. "The wires are cut. You couldn't go to sleep now if you tried."

Neill waited until the three men had left the lecture room on their way back to the Recreation Wing and then stepped down from the dais and shut the door. He was a short, broad-shouldered man in his fifties, with a powerful neck and hard, small features. He swung a chair out of the front row and straddled it deftly.

"Well?" he asked.

Morley was sitting on one of the desks against the back wall, legs up, playing aimlessly with a pencil. At thirty he was the youngest member of the team working under Neill at the Clinic, but he'd noticed that Neill liked to talk to him.

He saw Neill was waiting for an answer and shrugged.

"Everything seems to be going O.K.," he said. "Surgical convalescence is over and all the servos are working smoothly. Body chemistry, cardiac rhythms, EEG, completely normal. I saw the X-rays this morning and the archoid ridges have sealed beautifully.

Neill watched him quizzically. "You don't sound as if you really approve."

Morley laughed and stood up. "Of course I do." He walked down the aisle between the desks, white coat unbuttoned, hands sunk deep in his pockets. "No, so far you've vindicated yourself on every point. The party's only just beginning, but the guests are in damn good shape. No doubt about it. I thought three weeks was a little early to bring them out of hypnosis, but you'll probably be right there as well. Tonight is the first one they take on their own. Let's see how they are tomorrow morning."

"What are you secretly expecting?" Neill asked wryly. "Massive feed-back from the medulla?"

"No," Morley said. "There again the pychometric tests have shown absolutely nothing coming up at all. Not a single

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trauma." He stared at the blackboard and then looked round at Neill. " Yes, as a cautious estimate I'd say you've succeeded."

Neill leaned forwards on his elbows, flexed his jaw muscles. " I think I've more than succeeded. Blocking those medullary synapses has eliminated a lot of material I thought would still be there—the minor quirks and complexes, petty aggressive phobias, the small change in the psychic bank. Most of them have gone, or at least they don't show in the tests. However, they're the side targets, and thanks to you, John, and to everyone else in the team, we have a bull on the main one."

Morley murmured something, but Neill ran on in his clipped, rapid voice. " None of you realize it yet, but this is as big an advance as the step the first ichthypod took out of the protozoic sea 300 million years ago. At last we've freed the mind, raised it out of that archaic sump called sleep, its nightly retreat into the medulla. With virtually one cut of the scalpel we've added twenty years to those men's lives."

" I only hope they know what to do with them," Morley commented sombrely.

" Come, John," Neill snapped back. " That's not an argument. What they do with the time is their responsibility anyway. They'll make the most of it, just as we've always made the most, eventually, of any opportunity given us. It's too early to think about it yet, but visualise the universal application of our technique. For the first time Man will be living a full twenty-four hour day, not spending a third of it as an invalid, snoring his way through an eight-hour peep-show of infantile erotica."

Tired, Neill broke off and rubbed his eyes. " What's worrying you ?" he asked, glancing up at Morley.

Morley made a small, helpless gesture with one hand. "I'm not sure, it's just that I . . ." He played with the big red plastic brain mounted on a stand next to the blackboard. Reflected in one of the frontal whorls was a distorted image of Neill, with a twisted chinless face and vast domed cranium. Sitting alone among the desks in the empty lecture room he looked like an insane genius patiently waiting to take an examination no-one could set him.

Morley span the model with his finger, watched the image blur and dissolve.

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"I know all you've done is close off a few of the loops in the hypothalamus, and I realize the results are going to be spectacular. You'll probably precipitate the greatest social and economic revolution since the Fall. But for some reason I can't get that story of Chekov's out of my mind—the one about the man who accepts a million-rouble bet that he can't shut himself up alone for ten years. He tries to, nothing goes wrong, but one minute before the time's up he deliberately steps out of his room. Of course, he's insane."

"So?"

"I don't know. I've been thinking about it all week, but I can't see where the tie-up is."

Neill let out a light snort. "I suppose you're trying to say that sleep is some sort of communal activity and that these three men are now isolated, exiled from the group unconscious, the dark oceanic dream. Is that it?"

"Maybe."

"Nonsense, John. The further we dyke back the unconscious the better. Reclaim some of the marsh-land. Physiologically sleep is nothing more than an inconvenient symptom of cerebral anoxaemia. It's not that you're afraid of missing, it's the dream. You want to hold on to your front-row seat at the peep-show."

"No," Morley said mildly. "What I really mean is that for better or worse Lang, Gorrell and Avery are now stuck with themselves. For the duration. They're never going to be able to get away, not even for a couple of minutes, let alone eight hours. How much of yourself can you stand? Maybe you need eight hours off a day just to get over the shock of being yourself. Remember, you and I aren't always going to be around, feeding them with tests and movies. What will happen if they get fed up with themselves?"

"They won't," Neill said. He stood up, suddenly bored by Morley's questions. "The total tempo of their lives will be lower than ours, these stresses and tensions won't begin to crystallise. We'll soon seem like a lot of manic-depressives to them, running round like dervishes half the day, then collapsing into a stupor the other half."

He moved towards the door, reached out to the light-switch. "Well, I'm just about at the bottom of my curve. See you at 6-0."

They left the lecture room and started down the corridor together.

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"What are you doing now?" Morley asked.

Neill grinned ruefully. "What do you think?" he said. "I'm going to go and get myself a good night's sleep."

A little after midnight Avery and Gorrell were playing table-tennis in the flood-lit gym. They were competent players, and passed the ball backwards and forwards with a minumim of effort. Both felt strong and alert; Avery was sweating slightly, but this was due to the long banks of arc-lights blazing down from the roof—maintaining, for safety's sake, an illusion of continuous day—rather than to any excessive exertion of his own. Tall and detached, with a lean, closed face, he made no attempt to talk to Gorrell and concentrated on adjusting himself to the period ahead. He knew he would find no trace of fatigue, but as he played he carefully checked his respiratory rhythms and muscle tonus, and kept one eye closely on the clock, scoring off the quarter-hour intervals.

Gorrell, usually a relaxed, amiable cycloid, was also subdued. Between strokes he glanced cautiously round the gym, noting the high-hangar like walls, the broad, polished floor, the shuttered sky-lights in the roof. Now and then, without realizing it, he fingered the circular trepan scar between his mastoid bones at the back of his head.

Out in the centre of the gym a couple of armchairs and a sofa had been drawn up round a radiogram, and here Lang was playing chess with Morley, doing his section of night duty. He hunched forwards over the chess-board, wiry-haired and aggressive, with a small, sharp nose and mouth, watching the pieces closely. He had played regularly against Morley since he arrived at the Clinic four months earlier, and the two were almost equally matched, with perhaps a slight edge to Morley. But tonight Lang had opened with a new attack and after ten moves had completed his development and begun to split Morley's defence. His mind felt clear and precise, focused sharply on the game in front of him with no penumbral fall-off, though only that morning had he finally left the cloudy limbo of post-hypnosis through which he and the two others had drifted for three weeks like lobotomised phantoms.

Behind him, along one wall of the gym, were the offices housing the control unit, and looking over his shoulder he saw a face peering at him through the small circular observation window in one of the doors. Here, at constant alert, a

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group of orderlies and internes lounged around waiting by their emergency trollies. (The end door, into a small ward containing three cots, was kept carefully locked). After a few moments the face withdrew, and Lang smiled at the elaborate machinery guarding over him. His transference onto Neill had been positive and he had absolute faith in the success of the experiment. Neill had assured him that, at worst, the sudden accumulation of metabolites in his bloodstream might induce a mild torpor, but his brain would be unimpaired.

" Nerve fibre, Robert," Neill had told him time and time again, " never fatigues. The mind cannot tire."

While he waited for Morley to move he checked the time from the clock mounted against the wall. 12-20. Morley yawned, neck muscles bunching under his drawn grey skin. He looked tired, drab. He slumped down into the armchair, face in one hand. Lang reflected how frail and primitive those who slept would soon seem, their minds sinking off each evening under the load of accumulating toxins, the edge of their awareness worn and frayed. Suddenly he realised that at that very moment Neill himself was asleep. A curiously disconcerting vision of Neill, huddled in a rumpled bed two floors above, his blood-sugar low, metabolism sluggish, mind drifting, rose before him.

Lang laughed at his own conceit, and Morley retrieved the rook he had just moved.

" I must be going blind. What am I doing ?"

" No," Lang said. He started to laugh again. " I've just discovered I'm awake."

Morley grinned. " We'll have to put that down as one of the sayings of the week." He replaced the rook, sat up and looked across at the table-tennis pair. Gorrell had swiped a fast backhand low over the net and Avery was trotting to the rear of the gym after the ball.

" They seem to be O.K. How about you ?"

" Right on top of myself," Lang said. His eyes flicked quickly up and down the board and he moved before Morley caught his breath back.

Usually they went right through into the end-game, but tonight Morley had to concede on the twentieth move.

" Good," he said encouragingly. " You'll be able to take on Neill soon. Like another ?"

" No. Actually the game bores me a little. I can see that's going to be a problem."

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" You'll face it. You're not swimming now, you're walking. Give yourself time to find your legs."

Lang pulled one of the Bach albums out of its rack in the gram cabinet. He put a Brandenburg Concerto on the turntable and lowered the sapphire. As the rich, contrapuntal patterns chimed out he tapped a foot and jigged up and down in his seat.

Morley thought: Crazy. How fast can you run? Three weeks ago you were strictly a hep-cat.

The next few hours passed rapidly.

At 1-30 they left the gym and went up to the Surgery Lab, where Morley and one of the internes gave them a quick physical, checking their renal clearances, heart-rate and reflexes.

Dressed again, they went into the cafeteria for a snack, sat on the stools, arguing what to call this new fifth meal. Avery suggested ' Midfood,' Morley ' Munch.'

At 2-0 they took their places in the Neurology theatre, spent a couple of hours watching films of the hypno-drills of the back three weeks.

When the programme ended they started down for the gym, the night-drag almost over. They were still relaxed and cheerful; Gorrell led the way, playfully ribbing Lang over some of the episodes in the films, mimicking his trance-like walk.

" Eyes shut, mouth open," he demonstrated, swerving into Lang, who jumped nimbly out of his way. " Look at you, you're doing it even now. Believe me, Lang, you're not awake, you're damn well sonambulating." He called back to Morley. " Agreed, Doctor ?"

Morley swallowed a yawn and grinned. " Well, if he is, that makes two of us." He followed them along the corridor, doing his best to stay awake, feeling as if he, and not the three men in front of him, had been without sleep for the last three weeks.

Then, as they turned into the stairway leading down to the gym, something happened that snapped him back to full consciousness and gave him his first jolting glimpse of danger.

Though the Clinic was asleep, at Neill's orders all lights along the corridors and down the stairway had been left on. Ahead of them two orderlies checked that windows they passed were safely screened and doors shut. Nowhere was there a single darkened alcove or shadow-trap.

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Neill had insisted on this, reluctantly acknowledging a possible reflex association between darkness and sleep: "Let's admit it. In all but a few organisms the association *is* strong enough to be a reflex. The higher mammals depend for their survival on a highly acute sensory apparatus, combined with a varying ability to store and classify information. Plunge them into darkness, and cut off the flow of visual data to the cortex, and they're paralysed. Sleep is a defence reflex. It lowers the metabolic rate, conserves energy, increases the organism's survival-potential by merging it into its habitat . . ."

On the landing half-way down the staircase was a wide, shuttered window that by day opened out onto the park-scape behind the Clinic. As he passed it Gorrell suddenly stopped. He went over, released the blind, then unlatched the shutter.

Still holding it closed he turned to Morley, watching from the flight above.

"Tabu, Doctor?" he asked.

Morley hesitated, looked at each of the three men in turn. Gorrell was calm and unperturbed, apparently satisfying nothing more sinister than an idle whim. Lang squatted on the rail, watching curiously, with an expression of clinical disinterest. Only Avery seemed slightly anxious, his thin face wan and pinched. Morley had an irrelevant thought: 5 a.m. shadow—they'll need to shave twice a day. Then: why isn't Neill here? He knew they'd make for a window as soon as they got the chance.

He noticed Gorrell giving him an oblique, amused smile and shrugged, trying to disguise his uneasiness.

"Go ahead, if you want to. As Neill said, the wires are cut."

Gorrell threw back the shutter, and they clustered round the window and stared out into the night. Below pewter-grey lawns stretched toward the pines and low hills in the distance. A couple of miles away on their left a neon sign slowly winked and becked.

Neither Gorrell nor Lang noticed any reaction, and their interest began to flag within a few moments. Avery felt a sudden lift under the heart, quickly controlled himself. His eyes began to sift the darkness; the sky was clear and cloudless, and through the stars he picked out the narrow, milky traverse

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of the galactic rim. He watched it silently, letting the cool wind fan the sweat off his face and neck.

Morley stepped over to the window, leaned his elbows on the sill next to Avery. Out of the corner of his eye he carefully waited for any motor tremor—a fluttering eyelid, accelerated breathing—that would signal a reflex discharging. He remembered Neill's warning: " In Man sleep is largely volitional, and the reflex is conditioned by habit. But just because we've cut out the hypothalamic loops regulating the flow of consciousness doesn't mean the reflex won't discharge down some other pathway. That's where we could easily run into trouble. However, sooner or later we'll have to take the risk and give them a glimpse of the dark side of the sun."

Morley was musing on this when he felt something nudge his shoulder.

" Doctor," he heard Lang say. " Doctor Morley."

He pulled himself together with a start, saw that he was alone at the window. Gorrell and Avery were half-way down the next flight of stairs.

" What's up ?" Morley asked quickly.

" Nothing," Lang assured him. " We're just going back to the gym." He looked closely at Morley. " You O.K.?"

Morley rubbed his face. " God," he said with a laugh. " I must have been asleep." He glanced at his watch. 4-20. They'd been at the window for over fifteen minutes. All he could remember was leaning on the sill. " And I was worried about it knocking *you* out."

Everybody was amused, Gorrell particularly.

" You'd better watch that reflex, Doctor," he drawled. " If you're interested I can recommend you to a good narcotomist."

After 5-0 they all felt a gradual ebb of tonus from their arm and leg muscles. Renal clearances were falling and breakdown products were slowly clogging their tissues. Their palms felt damp and numb, the soles of their feet like pads of sponge rubber. The sensation was vaguely unsettling, for it was allied to no feelings of mental fatigue. Gorrell and Lang tried walking round the gym, finally gave up and sat down.

The numbness spread. Avery noticed it stretching the skin over his cheekbones, pulling at his temples, giving him a slight frontal migraine. He doggedly turned the pages of a magazine, his hands like lumps of putty, watching the clock edge round to 6-0.

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Then Neill came down, and they began to revive. Neill looked fresh and spruce, bouncing on the tips of his toes.

"How's the night shift going?" he asked briskly, walking round each one of them in turn, smiling as he sized them up. "Feel all right?"

"Not too bad, Doctor," Gorrell told him. "Just a slight case of insomnia."

Neill roared, slapped him on the shoulder and led the way up to the Surgery lab.

At 9-0, shaved, showered and in fresh clothes, they assembled in the lecture room. They felt cool and alert again. The peripheral numbness and slight head torpor had gone as soon as the detoxication drips had been plugged in, and Neill told them that within a week their kidneys would have enlarged sufficiently to cope on their own.

All morning and most of the afternoon they worked on a series of IQ, associative and performance tests; Neill kept them hard at it, steering swerving blips of light around a cathode screen, juggling with intricate numerical and geometric sequences, elaborating word-chains.

He seemed more than satisfied with the results.

"Shorter access times, deeper memory traces," he pointed out to Morley when the three men had gone off at 5-0 for the rest period. "Barrels of prime psychic marrow." He gestured at the test-cards spread out across the desk in his office. "And you were worried about the Unconscious. Look at those Rorshachs of Lang's. Believe me, John, I'll soon have him reminiscing about his foetal experiences."

Morley nodded, his first doubts fading.

Over the next two weeks either he or Neill was with the men continuously, sitting out under the floodlights in the centre of the gym, assessing their assimilation of the eight extra hours, carefully watching for any symptoms of withdrawal. Neill carried everyone along, from one programme phase to the next, through the test periods, across the long, slow hours of the interminable nights, his powerful ego-dynamic injecting enthusiasm into every member of the unit.

Privately, Morley worried about the increasing emotional overlay apparent in the relationship between Neill and the three men. He was afraid they were becoming conditioned to identify Neill with the experiment. (Ring the meal-bell and the subject salivates; but suddenly stop ringing the bell after a

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long period of conditioning and it temporarily loses the ability to feed itself. This hiatus barely harms a dog, but it might trigger disaster in an already over-sensitized psyche).

Neill was fully alert to this.

At the end of the first fortnight, when he caught a bad head-cold after sitting up all night in the gym and decided to spend the next day in bed, he called Morley in to his office.

"The transference is getting much too positive. It needs to be eased off a little."

"I agree," Morley said. "But how?"

"Tell them I'll be asleep for forty-eight hours," Neill said. He picked up a huge stack of reports, plates and test-cards, bundled them under one arm. "I've deliberately over-dosed myself with sedative to get some rest. I'm worn to a shadow, full fatigue syndrome, load-cells screaming. Lay it on."

"Couldn't that be rather drastic?" Morley asked. "They'll hate you for it."

But Neill only smiled and went off to requisition an office near his bedroom.

That night Morley was on duty in the gym from 10-0 p.m. to 6-0 a.m. As usual he first checked that the orderlies were ready with their emergency trollies, read through the log left by the previous supervisor, one of the senior internes, and then went over to the circle of chairs. He sat back on the sofa next to Lang and leafed idly through a magazine, watching the three men carefully. In the glare of the arc-lights their lean faces had a sallow, cyanosed look. The senior interne had warned him that Avery and Gorrell might over-tire themselves at table-tennis, but by 11-0 p.m. they stopped playing and settled down in the armchairs. They read desultorily and made two trips up to the cafeteria, escorted each time by one of the orderlies. Morley told them about Neill, but surprisingly none of them made any comment.

Midnight came slowly. Avery read, his long body hunched up in an armchair, Gorrell played chess against himself.

Morley dozed.

Lang felt restless. The gym's silence and absence of movement oppressed him. He switched on the radiogram and played through a Brandenburg, analysing its theme-trains. Then he ran a word-association test on himself, turning the pages of a book and using the top right-hand corner words as the control list.

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Morley leaned over.

" Anything come up ?" he asked.

" A few interesting responses." Lang found a note-pad and jotted something down. " I'll show them to Neill in the morning—or whenever he wakes up."

He gazed up pensively at the arc-lights. " I was just speculating. What do you think the next step forward will be ?"

" Forward where ?" Morley asked.

Lang gestured expansively. " I mean up the evolutionary slope. 300 million years ago we became air-breathers and left the primeval sea behind. Now we've taken the next logical step forward and eliminated the sleep function. What's next ?"

Morley shook his head. " The two steps aren't analogous. Anyway, in point of fact you haven't left the primeval sea behind. You're still carrying a private replica of it around as your blood-stream. All you did was encapsulate a necessary chunk of the physical environment in order to escape it."

Lang nodded. " Maybe. I was thinking of something else. Tell me, has it ever occured to you how completely death-orientated the psyche is ?"

Morley smiled. " Now and then," he said, wondering where this led.

" It's curious," Lang went on reflectively. " The pleasure-pain principle, the whole survival-compulsion apparatus of sex, the Super-Ego's obsession with tomorrow—most of the time the psyche can't see further than its own tombstone. Now why has it got this strange fixation ? For one very obvious reason." He tapped the air with his forefinger. "Because every night it's given a pretty convincing reminder of the fate in store for it."

" You mean the black hole," Morley suggested wryly. " Sleep ? "

" Exactly. It's simply a pseudo-death. Of course, you're not aware of it, but it must be terrifying." He frowned. " I don't think even Neill realises that, far from being restful, sleep is a genuinely traumatic experience."

So that's it, Morley thought. The great father analyst has been caught napping on his own couch. He tried to decide which were worse—patients who knew a lot of psychiatry, or those who only knew a little ?

" Eliminate sleep," Lang was saying, " and you also eliminate all the fear and defence mechanisms erected round it.

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Then, at last, the psyche has a chance to orientate toward something more valid."

"Such as . . . ?" Morley asked.

"I don't know. Perhaps . . . Self?"

"Interesting," Morley commented. It was 3-10 a.m. He decided to spend the next hour going through Lang's latest test-cards.

He waited a discretionary five minutes, then got up and walked over to the surgery office.

Lang hooked an arm across the back of the sofa and watched the orderly room door.

"What's Morley playing at?" he asked. "Either of you seen him anywhere?"

Avery lowered his magazine. "Didn't he go off into the orderly room?"

"Ten minutes ago," Lang said. "He hasn't looked in since. There's supposed to be someone on duty with us continuously. Where is he?"

Gorrell, playing solitaire chess, looked up from his board. "Perhaps these late nights are getting him down. You'd better go and wake him before Neill finds out. He's probably fallen asleep over a batch of your test-cards."

Lang laughed and settled down in the sofa. Gorrell reached out to the radiogram, angled a record out of the rack and slid it onto the turn-table.

As the radiogram began to hum Lang noticed how strangely silent and deserted the gym seemed. The Clinic was always quiet, but even at night a residual ebb and flow of sound—a chair dragging in the orderly room, a generator charging under one of the theatres—eddied through and kept it alive.

Now the air was flat and motionless. Lang listened carefully. The whole place had the dead, echoless feel of an abandoned building.

He stood up, looked around and strolled over to the orderly room. He knew Neill discouraged casual conversation with the control crew, but Morley's absence puzzled him.

He reached the door and peered through the port to see if Morley was inside.

The room was empty.

The light was on, two emergency trollies stood in their usual place against the wall near the door, a third was in the middle of the floor, a pack of playing-cards strewn across its

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deck, but the group of three or four orderlies and internes had gone.

Lang hesitated, reached down to open the door, and found it had been locked.

He tried the handle again, then called out over his shoulder:

"Avery. There's nobody in here."

"Well, try next door. They're probably getting briefed for tomorrow."

Lang stepped over to the surgery office and squinted through the porthole. The light was off and two lab coats hanging inside the door cut off most of the window, but he could just see the white enamelled desk and big programme charts round the wall standing out in the dimness.

There was no-one inside.

Avery and Gorrell were lounging back, watching him.

"Are they in there?" Avery asked.

"No." Lang turned the handle, felt it hold. "Door's locked."

Gorrell switched off the radiogram and he and Avery came over. They tried the two doors again.

"They're here somewhere," Avery said. "There must be at least one person on duty." He pointed to the end door. "What about that one?"

"Locked," Lang said. "69 always has been. I think it leads down to the basement."

"Let's try Neill's office then," Gorrell suggested. "If they aren't in there we'll stroll through to Reception and try to check ourselves out. This must be some stunt of Neill's."

There was no window in the door to Neill's office. Gorrell knocked, waited, knocked again more loudly.

Lang tried the handle, then knelt down. "The light's off," he reported.

Avery turned and looked round at the two remaining doors out of the gym, both in the far wall, one leading up to the cafeteria and the Neurology wing, the other into the car park at the rear of the Clinic.

"Didn't Neill hint that he might spring something like this on us?" he asked. "To assess our panic thresholds and decide whether we can go through a night on our own."

"But Neill's asleep," Lang objected. "He'll be in bed for a couple of days. Unless . . ."

Gorrell jerked his head in the direction of the chairs. "Come on. He and Morley are probably watching us now. I thought

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there was something just a little too cunning about that head-cold story."

They went back to their seats.

Gorrell dragged the chess stool over to the sofa and set up the pieces, Avery and Lang stretched out in armchairs and opened magazines, turning the pages deliberately. Above them the banks of arc-lights threw their wide cones of light down into the silence.

The only noise was the slow left-right, left-right motion of the clock.

3-15 a.m.

The shift was imperceptible. At first a slight change of perspective, a mere fading and regrouping of outlines. Somewhere a focus slipped, a shadow swung slowly across a wall, its angles breaking and lengthening. The motion was fluid, a procession of infinitessimals, but gradually its total direction emerged.

The gym was shrinking. Inch by inch, the walls were moving inwards, encroaching across the periphery of the floor. As they shrank towards each other their features altered: the rows of sky-lights below the ceiling blurred and faded, the power cable running along the base of the wall dimmed and merged into the skirting board, the square baffles of the air vents vanished into the grey distemper.

Above, like the under-surface of an enormous lift, the ceiling sank slowly towards the floor . . .

Gorrell leaned his elbows on the chess-board, face sunk in his hands. He had locked himself in a perpetual check, but he continued to shuttle the pieces in and out of one of the corner squares, now and then gazing into the air for inspiration, while his eyes roved carefully up and down the walls around him.

Somewhere, he knew, Neill was watching him.

He moved, looked up and followed the wall opposite him down to the far corner, alert for the tell-tale signs of a retractable panel. He swept it up and down systematically, pausing to examine every dip and shadow. For some while he had been trying to discover Neill's spy-hole, but without any success. The walls were blank and featureless; he had twice covered every square foot of the two facing him, and apart from the three doors there appeared to be no fault or aperture of even the most minute size anywhere on their surface.

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After a while his left eye began to throb painfully, and he pushed away the chess-board and lay back. Above him a line of fluorescent tubes hung down from the ceiling, mounted in checkered plastic brackets that diffused the light. He was about to comment on his search for the spy-hole to Avery and Lang when he realised that any one of them could conceal a microphone.

He decided to stretch his legs, stood up and sauntered off across the floor. After sitting over the chess board for half an hour he felt cramped and restless, and would have enjoyed tossing a ball up and down, or flexing his muscles on a rowing machine. But annoyingly no recreation facilities, apart from the three armchairs and the radiogram, had been provided.

He reached the end wall and wandered round, listening for any sound from the adjacent rooms. He was beginning to resent Neill spying on him and the entire key-hole conspiracy, and he noted with relief that it was a quarter past three: in under three hours it would all be over.

The gym closed in. Now less than half its original size, its walls bare and windowless, the ceiling twenty-five feet from the floor, it was a vast, shrinking box. The sides slid on each other, merging along an abstract hair-line, like gigantic planes severing in a multi-dimensional flux. Only the clock and a single door remained . . .

Lang had discovered where the microphone was hidden.

He sat forward in his chair, cracking his knuckles and fidgetting until Gorrell returned, then rose and offered him his seat. Avery was in the other armchair, feet up on the radiogram.

"Sit down for a bit," Lang said. "I feel like a stroll."

Gorrell lowered himself into the chair. "I'll ask Neill if we can have a ping-pong table in here. Should help pass the time and give us some exercise."

"A good idea," Lang agreed. "If we can get the table through the door. Actually I doubt if there's enough room in here, even if we moved the chairs right up against the wall. Those tables are larger than you think."

He walked off across the floor, surreptiously peering through the orderly room window. The light was on, but there was still no-one inside.

He ambled over to the radiogram and paced up and down near it for a few moments. Suddenly he swung round and caught his foot under the flex leading to the wall socket.

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The plug fell out onto the floor. Lang left it where it lay, went over and sat down on the arm of Gorrell's chair, smiling to himself.

"I've just disconnected the microphone," he confided quietly.

Gorrell looked round carefully. "Where was it?"

Lang pointed. "Inside the radiogram." He laughed softly. "I slipped the plug out. I thought I'd pull Neill's leg. He'll be wild when he realises he can't hear us."

"Why do you think it was in the gram?" Gorrell asked.

"What better place? Besides, it couldn't be anywhere else. Apart from in there." He gestured at the light bowl suspended from the centre of the ceiling. "You can see it's empty except for the two bulbs. The radiogram is the obvious place. I had a feeling it was there all along, but I wasn't sure until I noticed we had a radiogram, but no records."

Gorrell nodded sagely.

Lang moved away, chuckling to himself.

Above the door of Room 69 the clock ticked on at 3-15.

The motion was accelerating. What had once been the gym was now a small room, seven feet wide, a tight, almost perfect cube. The walls plunged inwards, along colliding diagonals, only a few feet from their final focus . . .

Avery noticed Gorrell and Lang pacing slowly round his chair.

"Either of you want to sit down yet?" he asked.

They both shook their heads. Avery rested for a few minutes and then climbed out of the chair and stretched himself.

"Quarter past three," he remarked, pressing his hands against the ceiling. "This is getting to be a long night."

He leaned back to let Gorrell pass him, and then started to follow the others round the narrow interval between the armchair and the walls.

"I don't know how Neill expects us to stay awake in this hole for twenty-four hours a day," he went on. "Why haven't we got a radio in here? Even a gramophone would be something."

They sidled round the chair together, Gorrell, followed by Avery, with Lang completing the circle, their shoulders beginning to hunch, heads down as they watched the floor, their feet falling into the slow, leaden rhythm of the clock.

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This, then, was the manhole : a narrow, vertical cubicle, a few feet wide, six deep. Above a solitary, dusty bulb gleamed down from a steel grille. As if crumbling under the impetus of their own momentum, the surface of the walls had coarsened, the texture was that of stone, streaked and pitted . . .

Gorrell bent down to loosen one of his shoelaces, and Avery bumped into him sharply, knocking his shoulder against the wall.

" O.K. ?" he asked, taking Gorrell's arm. " This place is a little over-crowded. I can't understand why Neill ever put us in here."

He leaned against the wall, head bowed to prevent it touching the ceiling, and gazed about thoughtfully.

Lang stood squeezed into the corner next to him, shifting his weight from one foot to the other.

Gorrell squatted down on his heels below them.

" What's the time ?" he asked. " Any idea ?"

" I'd say about 3-15," Lang offered. " More or less."

" Lang," Avery asked, " where's the ventilator here ?"

Lang peered up and down the walls, across the small square of ceiling. " Must be one somewhere." Gorrell stood up and they shuffled round, examining the floor between their feet.

" There may be a vent in the light grille," Gorrell suggested. He reached up and slipped his fingers through the cage, running them behind the bulb.

" Nothing there. Odd. I should have thought we'd burn up the air in here within half an hour."

" Easily," Avery said. " You know, there's something—"

Just then Lang broke in. He gripped Avery's elbow tightly.

" Avery," he asked. " Tell me. How did we get here ?"

" What do you mean, get here ? We're on Neill's team."

Lang cut him off. " I know that." He pointed at the floor. " I mean, in here."

Gorrell shook his head slowly. " Take it easy, Lang. How do you think, through the door."

Lang looked squarely at Gorrell, then at Avery.

" What door ?" he asked calmly.

Gorrell and Avery hesitated, then swung round at each wall in turn, scanning it from floor to ceiling. Avery ran his hands over the heavy masonry, knelt down and felt the floor, digging his fingers at the rough stone slabs. Gorrell crouched beside him, scrabbling at the thin seams of dirt.

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Lang backed out of their way into a corner, and watched them impassively. His face was calm and motionless, but in his left temple a single vein fluttered insanely.

When they finally stood up, staring at each other unsteadily, he flung himself between them at the opposite wall.

" Neill ! Neill !" he shouted. He pounded angrily on the wall with his fists. " Neill ! Neill ! Neill ! "

Above him the light slowly began to fade.

Morley closed the door of the surgery office behind him and went over to the desk. Though it was 3-15 a.m., Neill, head-cold or no head-cold, was probably awake, working on the latest material in the office next to his bedroom. Fortunately that afternoon's test-cards, freshly marked by one of the internes, had only just reached his in-tray.

Morley picked out Lang's folder, and started to sort through the cards, looking for the association and auto-analysis results. He suspected that Lang's responses to some of the key-words and suggestion-triggers lying disguised in the question-forms might throw illuminating side-lights onto the real motives behind his equation of sleep and death.

The communicating door to the orderly room opened and an interne looked in.

" Do you want me to take over in the gym, Doctor ?"

Morley waved him away. " Don't bother. I'm going back in a moment."

He selected the cards he wanted, began to initial his withdrawals. Glad to get away from the glare of the arc-lights he delayed his return as long as he could, and it was 3-25 a.m. when he finally left the office and stepped back into the gym.

The men were sitting where he had left them. Lang watched him approach, head propped comfortably on a cushion. Avery was slouched down in his arm-chair, nose in a magazine, while Gorrell hunched over the chess-board, hidden behind the sofa.

" Anybody feel like coffee ?" Morley called out, deciding they needed some exercise.

None of them looked up or answered. Morley felt a flicker of annoyance, particularly at Lang, who was staring past him at the clock.

Then he saw something that made him slow down and stop.

Lying on the polished floor ten feet from the sofa was a chess-piece. He went over and picked it up. The piece was

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the black king. He wondered how Gorrell could be playing chess with one of the two essential pieces of the game missing when he noticed three more pieces lying on the floor nearby.

His eyes moved along to where Gorrell was sitting.

Scattered over the floor below the chair and sofa was the rest of the set. Gorrell was slumped forwards over the stool. One of his elbows had slipped and the arm dangled between his knees, knuckles resting on the floor. The other hand supported his face. Dead grey eyes peered down at his feet.

Morley ran over to him, yelling: " Lang ! Avery ! Get the orderlies in here !"

He reached Gorrell, pulled him back off the stool.

" Lang ! " he called again.

Lang was still staring at the clock, his body twisted in the stiff, unreal posture of a waxworks dummy.

Morley let Gorrell loll back into the chair, leaned over and glanced at Lang's face.

He quickly crossed to Avery, stretched out behind the magazine, and jerked his shoulder. Avery's head bobbed stiffly. The magazine slipped and fell from his hands, leaving his fingers curled in front of his face.

Morley stepped over Avery's legs to the radiogram. He switched it on, gripped the volume control and swung it round to full amplitude.

Above the orderly room door an alarm bell shrilled out through the silence.

" Weren't you with them ?" Neill asked sharply.

" No," Morley admitted. They were standing by the door of the emergency ward. Two orderlies had just dismantled the electrotherapy unit and were wheeling the console away on a trolley. Outside in the gym a quiet, urgent traffic of nurses and internes moved past. All but a single bank of the arc-lights had been switched off, and the gym seemed like a deserted stage at the end of a performance.

" I slipped into the office to pick up a few test-cards," he explained. " I wasn't gone more than ten minutes."

" You were supposed to watch them continuously," Neill snapped. " Not wander off by yourself whenever you felt like it. What do you think we had the gym and this entire circus rigged up for ?"

It was a little after 5-30 a.m. After working hopelessly on the three men for a couple of hours he was close to exhaustion.

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He looked down at them, lying inertly in their cots, canvas crash sheets buckled up to their chins. They had barely changed, but their eyes were open and unblinking, and their faces had the empty, reflexless look of psychic zero.

An interne bent over Lang, thumbing a hypo. Morley stared at the floor. " I think they would have gone anyway."

" How can you say that ?" Neill clamped his lips together. He felt frustrated and impotent. He knew Morley was probably right—the three men were in terminal withdrawal, unresponsive to either insulin or electro-therapy, and a vice-tight catatonic seizure like that didn't close in out of nowhere —but as always refused to admit anything without absolute proof.

He led the way into his office and shut the door.

" Sit down." He pulled a chair out for Morley and prowled off round the room, slamming a fist into his palm.

" All right, John. What is it ?"

Morley picked up one of the test-cards lying on the desk, balanced it on a corner and spun it between his fingers. Phrases swam through his mind, tentative and uncertain, like blind fish.

" What do you want me to say ?" he asked. " Reactivation of the infantile imago ? A regression into the great, slumbering womb ? Or to put it more simply still—just a fit of pique ?"

" Go on."

Morley shrugged. " Continual consciousness is more than the brain can stand. Any signal repeated often enough eventually loses its meaning. Try saying the word ' cow ' fifty times. After a point the brain's self-awareness dulls. It's no longer able to grasp who or why it is, rides adrift."

" What do we do then ?"

" Nothing. Short of re-scoring all the way down to Lumbar 1. The central nervous system just won't wear narcotomy."

Neill shook his head, came back from the window. "You're getting lost," he said curtly. " Juggling with generalities isn't going to bring those men back. First we've got to find out what happened to them, what they actually felt and saw."

Morley frowned dubiously. " That jungle's marked ' private.' Even if you do, is a psychotic's withdrawal drama going to make any sense ?"

" Of course it will. However insane it seems to us it was real enough to them. If we know the ceiling fell in or the whole gym filled with ice cream or suddenly turned into a maze

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we've got something to work on." He sat down on the desk. "Listen. Remember that story of Chekov's you told me about?"

"'The Bet'? Yes."

"I read it last night. Curious. It's a lot nearer what you're really trying to say than you know." He gazed shrewdly round the office. "This room in which the man is penned for ten years, symbolizing the mind driven to the furthest limits of self-awareness . . . My hunch is that something very similar happened to Avery, Gorrell and Lang. They must have reached a stage beyond which they could no longer contain the idea of their own identity, more or less as you said. But far from being unable to grasp the idea I'd say that they were conscious of nothing else. Like the man in the spherical mirror, who can only see a single gigantic eye staring back at him."

"So you think their withdrawal is a straightforward escape from the eye, the vast overwhelming ego?"

"Not escape," Neill corrected. "The psychotic never escapes from anything. He's much more sensible. He merely readjusts reality to suit himself. Quite a trick to learn, too. The room in Chekov's story gives me a lead as to how they might have readjusted. Their particular equivalent of this room was the gym. I'm beginning to realize it was a big mistake to put them in there—all those lights blazing down, the huge floor, high walls. They merely exaggerate the sensation of overload. In fact the gym might easily have become an external projection of their own egos."

Neill drummed his fingers on the desk, then snapped them sharply. "My guess is that at this moment they're either striding around in there the size of hundred-foot giants, or else they've cut it down to their own dimensions. More probably that. They've just pulled the gym in on themselves."

Morley grinned bleakly. "So all we've got to do now is pump them full of honey and apomorphine and coax them out of their holes. Suppose they refuse?"

"They won't," Neill said. "You'll see."

There was a rap on the door. An interne stuck his head through.

"Lang's coming up, Doctor. He's calling for you."

Neill bounded out.

Morley followed him into the ward.

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Lang was lying in his cot, body motionless under the crash sheet, his face a mask. His lips were parted slightly. No sound came from them but Morley, bending over next to Neill, could see his hyoid bone vibrating in spasms.

"He's very faint," the interne warned. "I doubt if he'll hold it. These may be fragments."

Neill pulled up a chair and sat down next to the cot. He made a visible effort of concentration, flexing his shoulders like a weight-lifter. He bent his head close to Lang's and listened.

Five minutes later it came through again.

Lang's lips quivered. His body arched under the crash sheet, straining at the buckles, and then subsided.

"Neill . . . Neill," he whispered. The sounds, thin and strangled, seemed to be coming from the bottom of a well. "Neill . . . Neill . . . Neill . . ."

Neill stroked his forehead with a small, neat hand.

"Yes, Bobby," he said gently. His voice was feather-soft, caressing. "I'm here, Bobby. You can come out now."

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Every race, whether alien or human, must have a strong survival instinct, but self-preservation can take many varying forms the least of which is aggressiveness. Given an alien environment, human beings may find themselves up against a defence mechanism completely strange and almost incomprehensible.

DEFENCE MECHANISM

By Donald Malcolm

Squinting at the bright yellow sun of Argos II, Lieutenant John Grange wiped his brow and thought it was a hell of a day for an arms inspection. However, Sergeant Cutter had a respectful but very firm way of reminding him about Space Navy regulations. Grange would cheerfully have thrown them into the converters, only the redoubtable Marine seemed to derive many hours of reading pleasure from them.

The officer was standing in the shade of the food store. It had belonged to the exploration team whose demise Grange and a team of experts was now investigating. The noon air shimmered and the sea was exceptionally blue and deep looking.

Sergeant Cutter stepped forward and saluted smartly. His light drill must have been new out of the box, Grange was sure, conscious of his own creased garments. Discipline was Cutter's life and the Navy was his mother and father.

"Fourth Detachment Marines ready for your arms inspection, sir."

Returning the salute equally smartly, Grange replied, "Thanks, Sergeant. I'll not keep the men too long. It's damned hot." He was careful not to be too casual. Cutter

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wouldn't have cared if the temperature had been at boiling point. Regs were Regs.

"No grimy discharge nozzle this time, Cooke?" His amiable tone took any sting out of his reminder.

"No, sir." The young Marine's gaze flickered momentarily.

Cutter barked, "Eyes front, Marine!" He was following Grange like a shadow. "You don't have to look at the inspecting officer!"

Grange winced. Cooke seemed to shrink visibly.

The officer had inspected only three weapons when someone started yelling blue murder. He whirled in the direction of the shouting. A Marine was pointing down the ridge to the grassy plain, near the dense jungle edge. Through his glasses Grange spotted Kimberly and Moore running hell for leather towards the ridge. The latter was firing erratically as he ran.

In hot pursuit were three obviously hungry lions, so-called for want of a native name.

"Get down there with the men, Sergeant! Head those animals off!"

"On the double!" Cutter roared, setting the pace. Down the ridge they ran, firing as they went. One of the animals was hit and it keeled over, yowling horribly. Giving up the chase, its two companions pounced on it and proceeded to tear it to pieces. The runners had gained the ridge and, as the Marines helped them, the two lions settled down to a gory meal.

By this time, a nearby tent had spilled out four assorted experts. They grouped round Grange.

"I wonder who shot that lion?" Karl Bessmer, the dark little ecologist enquired, deftly relieving Grange of the glasses and peering through them.

"Do I detect a tinge of regret in your voice, Karl?" Harrigan, the tall, broad micro-biologist turned to him, clicking big teeth on a worn pipe stem.

Kennedy, the soil analyst, chipped in, "You bet there was!" Bessmer gave him the glasses. "That lion had almost caught up with Kimberly!" His eyes twinkled merrily.

Amid the laughter, the heavy jowled medical member of the team remarked reproachfully, "My, you're a bloodthirsty lot. He's not as bad as all that."

Grange glanced sharply at Doc Thornton, but the champion of the under dog was intent on watching the returning men.

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Too intent. No one, including Thornton himself, liked Kimberly much, but the doctor was not above stirring things up a little. He noted the reactions of the various men in a clinical sort of way.

While Moore and Kimberly walked slowly towards the group, Cutter dismissed his men, caustically reminding them to clean their weapons again. Grange grinned at the emphasis on the last word.

"Phew!" Ed Moore exclaimed, wiping his freckled brow. "That was a close call." Kimberly leaned like a skeleton against the food store wall, perspiration streaming down his gaunt pinched features. Both men were sodden with sweat. In Kimberly's case, it was probably one per cent heat and the rest fear, Grange thought unfairly.

"What happened, Ed?" he enquired of the bacteriologist.

"We got a bit too near the edge of the jungle. The lions came out at us," the other explained, his blaster hanging loose in his thin fingers. The explanation was brief, but Grange could see that the two men had been badly shaken, so he let it go. He would question them later. The whole object of his insistence on the scientists going out in pairs was to prevent any such incident as this.

"Any equipment lost?"

Moore shook his head and exhaled noisily.

Grange pursed his lips. The heat was becoming unbearable even in the shade. Rubbing a scar on his chin, he said, "Just try and be more careful in future. I'll see you both later. And don't forget to clean your weapons."

He insisted on each man taking care of his own firearms. When their lives depended on it, they would be extra careful.

They drifted away to clean up for lunch, which they still took inside the ship.

In his cabin, he gave himself a quick wash and brush up. For some reason or other, he was feeling down in the dumps. He had wanted to go out on the Wardle's Planet job; instead, Captain Watson, of the mother ship, *Quo Vadis*, had put him in charge of this expedition. Perhaps that was it.

Puffing a cigarette into life, he threw himself onto his bunk. He tried to relax, drawing the smoke deep into his lungs and letting it dribble slowly out through his nostrils. Sunk in his depression, he cursed the fact that he had not been born on Earth. But that wasn't rhe right way to think, he reprimanded

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himself. He should be proud that he was a colonial, that he was better than some of the men who held command in the Space Navy.

Hatred was growing steadily between Earth and the colonial worlds. In the early decades after Earth's expansion to the stars, her grip on her new planets had been vice-like. Gradually, the colonies began to demand a bigger say in the controlling of their own affairs. Naturally, Earth fought each demand tooth and nail, but the immense, unthinkable distances to even the nearest stars stretched her resources almost to the limit.

The home planet had no option but to accede to the colonial demands. However, she contrived to keep them tied to her apron strings like a possessive mother, Running a sprawling stellar empire entailed mountains of work. This was integrated in the huge electronic computor cities based on Mars. No colonial world boasted a decent computor unit.

Similarly, all the great universities and technical institutions were on Earth. The colonies had their own universities. But an application form for any professional post had an item which read :

DEGREES : WHERE TAKEN

Then followed a list of Terran universities.

Men, such as Kimberly and some of the other scientists on the mother ship, wanted to subject the colonies indefinitely. Grange was a colonial, an Outsider. As such, he could never become a Captain of any vessel flying the flag of the Terran Space Navy, or of any Government Agency. One of the petty rules designed to remind the colonial of his place. He could never quite attain the top. It rankled deep inside Grange.

Captain Watson wasn't the best field officer in the Interstellar Investigation Department through sitting around on his beam end. Somehow, Grange was sure, Watson had sent him on this mission for a good reason.

He drew on a new cigarette and wondered again what had really killed the exploration team. The only known fact was that their ship had exploded shortly after blast-off and smeared a square mile of the planet with a mess of bodies and equipment. Doc Thornton was working hard on the remains of the unfortunate victims picked up by the robots. He had reached a preliminary conclusion. The explosion had been the secondary cause of death.

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The planet had one vast continent, two-thirds jungle, which sprawled in irregular dominance of the equator. Rather like Africa with the bottom sliced off, and twice as big. A PST—Preliminary Survey Team—had landed and selected a suitable base site from which the exploration team could operate. This was near the delta of the River Argos. It rose in the Eastern mountains and met the sea on the Western seaboard.

The position they had chosen was on a broad ridge giving a commanding view all round. It was a good defensive site. Anything approaching from the sea, from the river, or the jungle would be spotted long before it was within striking distance.

Argos II was a few million miles under one A.U. from its sun. This, combined with the 0.04 per cent carbon content of the atmosphere and the proximity of the equator made the area somewhat tropical.

Rawlins, the exploration team leader, had expressed his satisfaction with the chosen position. All the robot analysis tests of air, soil and water had been carried out and checked in accordance with the book. If Grange knew anything about poor Rawlins, the tests had probably been gone over three times.

The atmosphere had much the same composition as the Earth's. The viruses and bacteria weren't inimical. The soil was rich and black and perfectly suited to the cultivation of crops from a number of worlds. The water was fresh and sparkling.

Small animals abounded; especially a grey-blue squirrel-like creature without a tail. They were all herbivorous. Not so their big brothers. The jungle harboured them, an ugly lot that preyed on the smaller animals or on each other.

After ten, 30-hour days cooped up in the ship, the experts had sallied forth without regret into a sunny, peaceful world. The base camp was recommended as the foundation of the colony. Everything pointed to Argos II being a haven for future colonists.

Then the team had died to a man.

The IID team had made their own tests—and arrived at precisely the same conclusions as the late team.

There being no further point in staying aboard, they began working outdoors, not without slight misgivings.

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Grinding the stub out, Grange swung his feet onto the floor and ruefully surveyed his crumpled shorts. No time to change; it was lunchtime.

Harrigan and Bessmer strolled slowly away from the beach. The sun was low in the apple-green sky and a gentle breeze was wafting away the lingering heat of the day.

The biologist sucked hard on his pipe and grunted, " We've been here fifteen days now and haven't turned up a clue as to what really wiped out the team."

He shifted the other's painting easel into a more comfortable position.

" It beats me too, Bart." Looking around him, Bessmer shrugged. " What could there possibly be here to force them to try and leave the planet and lead to their deaths ? This is a paradise."

" Even paradise has its pitfalls," Harrigan murmured thoughtfully.

In silence, they climbed up the slope of the ridge. To their left lay the ecologist's animal pens. Various examples of the planetary fauna had been trapped and caged. Most of them were hostile—ferociously so.

" Come on over," Bessmer invited. " We've time before sundown. I want to see how the snuggles are doing."

The little squirrel-like animals had been called that name by the ecologist. Of all the little animals, they were the friendliest. They loved to snuggle in and be petted, just like cats.

The little furry balls were delighted to see him and crowded against the wire to have their ears rubbed. Bessmer straightened up, frowning. Silently, he counted. " Nine ? There should be twelve."

" Why worry ? The place is overrun with them. Nearly broke an ankle in a blasted furrow yesterday."

" That's not the point. I was studying this particular lot. Where are they, I wonder ?"

" There !". Harrigan's pipe was an indicator.

The other, following the pipe, swore, covered his eyes, and groaned.

The missing trio were scampering about in the panther's cage. It was growling low in its black throat, its green eyes flashing. Up and down it paced, but it didn't go near the snuggles. They were apparently unconcerned.

" I must— !"

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Three sharp toots of the klakon cut Bessmer short and they started towards the ship .

" Come on !" Harrigan tugged urgently at his arm. " Triple-A alarm !"

Bessmer tore free. " My snuggles," he protested, ditching his canvas.

" Damn your snuggles !" the other retorted vehemently, grabbing him. They sprinted for the ship.

" What's all this about ?" Bessmer panted, elbowing his way to the front of the crowd. Harrigan, following in his wake, somehow managed to look cool and unflurried.

" If you'll kindly stop steaming up the place with your hot breath, Doc here will tell you," Grange replied, talking round a cigarette. " Seriously," he added, " it's important."

Kimberly sniffed. " I should hope so," he stated pompously. " I was engaged on very exacting work."

Digging Kimberly painfully in the ribs, Moore jibed, "Poor old Kimberly, always on the job, eh ?"

Grange cut in before the infuriated chemist could reply.

" Cut it out !" he rapped, glowering at them, his voice holding a no-nonsense tone.

The heavy-jowled medic had been sitting unconcernedly through all the cross talk, his hands folded contentedly over his rather large stomach. Abruptly, he threw on his professional cloak and became a doctor.

" Now, gentlemen," he began pedantically, beaming around him as if they were in college, " you may remember that I stated that the explosion was the secondary cause of death."

Bessmer agreed enthusiastically, trying to hurry him on. But he was rather like Harrigan in one respect. Nothing or no one would hurry him. He would take his time even if Doomsday was just around the corner.

" I think I have discovered the real cause of death."

" Yes ?" Bessmer prompted eagerly now that revelation was at hand.

As though he hadn't heard the little ecologist, Thornton continued imperturbably, " I placed the dead limbs into my regeneration tanks and revived the cells and the tissue."

A look of revulsion crept across one or two faces. " You mean you made those limbs *alive* again ?" Bessmer asked. He looked a bit green about the gills.

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Thornton raised his eyebrows in supplication and pursed his lips thoughtfully.

" We-ll—if you mean were they scampering about the laboratory, the answer is ' No'."

If levity was intended, it didn't show in his face. Karl was obviously relieved. While the others wore speculative expressions, Grange lounged back with the air of one hearing a story repeated.

" I fed nutrient solutions to the revived limbs. I should mention that one of the limbs was much—ah—healthier than the rest."

Harrigan had stoked up the inevitable pipe and the others were smoking cigarettes.

" My tests showed me that the atrophied limbs were in need of nutrition while the other one I mentioned did not. Briefly, the PET men died of starvation."

He said it quite expressionlessly.

There was a hubbub of noise, incredulous denials and a complimentary, " You're crazy !" from Kennedy.

" Starvation ! But that's impossible !" Bessmer burst out, disbelief written large across his features. " How could men starve in the midst of plenty ?"

Kennedy agreed. " That's true, Doc. The food store was half full."

Everyone began muttering, gesticulating and arguing.

" And that's not all." The Doc's gravel voice regained their attention.

" Don't tell us there's *more*," Moore demanded, turning to stare at Doc.

" Among the remains was part of a trunk with a portion of the head still attached." Carefully, he avoided placing any undue importance on this.

" Please, Doc," Bessmer held up a hand, " spare us the details."

" Okay, Karl. An unusual thing came to light during my examinations." He hooked his thumbs in his pockets and rocking back and forth on his heels, went on.

" You are all, I suppose, familiar with the pituitary gland at the base of the neck ? This gland produces hormones which control, among other functions, the appetite. If your hormone count is low in this respect, you will go off your

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food and feel extremely disinclined to eat. That was one of the symptoms of influenza, fortunately now extinct.

"I've had cases myself where the patients wouldn't eat. They had to be fed intravenously."

"What are you driving at?" Grange asked, blowing out smoke.

"Just this." The doctor turned to him. "I have satisfied myself beyond doubt that the pituitary gland of that body was, in some way, influenced so that the production of appetite stimulating hormones was reduced to a fatal level."

Bessmer spoke up in the racket that ensued.

"Now that you mention it, Doc," he revealed, rubbing the back of his neck furtively, "I haven't had much of an appetite for some days—"

Thornton nearly jumped down his throat.

"Why didn't you report to me at once?" he thundered angrily, his jowls shaking. "The Lieutenant distinctly told you all to report everything, however trivial and insignificant it might seem."

The ecologist stood looking down at his shoes. Turning to Grange, Thornton said, "I think we're onto something here. I'll have to examine Karl."

Seeing the little man about to protest, Thornton cut him off gruffly. "There's no danger involved."

To the others, he said, "Anyone else off their chow? No?"

As Karl was hustled out the door, Grange quietened the others.

"I want a detailed check of the exploration team's records made. There may be something vital there that we've overlooked. In fact, I'm almost certain the clue we seek is there."

Opening a cabinet, he passed out the papers, many of them in tatters. The worst of them had already been under the infra red and a transcription made.

"Let me know if you find anything that you feel has a bearing on the information we already have. Okay?"

He called Sergeant Cutter and told him to have lots of coffee sent up right away. The Marine whistled over his shoulder and a man brought in a tray.

"That guy's a psychic," Kennedy commented admiringly, pouring out coffee for everyone.

Grange grinned. "Couldn't do without him."

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Half an hour later, the Doc came back with Karl in tow. The ecologist, usually lively, looked washed out. He flopped into a chair like a broken doll and gratefully accepted a steaming cup. Work stopped and they gathered round expectantly.

" It's just as I thought," Thornton remarked, blowing on the coffee to cool it. " Karl's hormone flow is reduced."

Everyone stared at Bessmer who felt like a specimen on a pin. He shifted uncomfortably.

" Relax. It hasn't reached a danger level."

Sitting down, Grange pyramided his fingers and rested his brow on them. That was one of Watson's mannerisms, unconsciously picked up.

" That's something else to work on lads." He explained quickly to the latecomers what they were doing and they pitched in willingly. The only noises to be heard were the rustle of papers, punctuated by Kennedy slurping at his drink, a habit that endeared him to the others.

" Here's something !" Moore exclaimed, holding up a tattered piece of paper. " A Marine, Perkins, broke his leg and was confined to the ship."

Thornton tapped the table. " The healthy limb. It was his."

Sensing that they were really getting somewhere, they ploughed into the work. The PET had amassed an amazing amount of paperwork.

Pushing back his chair, Kennedy gulped some coffee, then asked Grange, " A point puzzles me. Why didn't the leader radio for help ? He must've known *something* was wrong."

The officer passed round cigarettes and puffing his into life, answered, " There was an immense photon storm of about seven weeks' duration. Communications in this area were shot to hell and gone."

Holding his cigarette delicately, as if he were doing it a favour by smoking it, Kimberly sniffed and suggested, "Why didn't they take the ship into orbit ? At least it would have removed them from the danger they knew was on the surface somewhere."

Repressing the urge to be sarcastic—who ever heard of a ship venturing into a photon storm area ?—Grange replied amiably, watching his smoke writhe, " There again, the photon storm was to blame. They would never have survived it. By the time the storm had passed, and they had radioed that they

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were high-tailing out, they were too weak to control the ship. The results we know," he added grimly, grinding the cigarette to shreds. It was suddenly distasteful.

Kennedy paused from drinking his third cup of coffee long enough to ask, " Couldn't they have put the ship on automatic ?"

Grange shrugged and grunted harshly, " The ship probably was on automatic. The accident might have been due to something else."

" Like a faulty fuel valve or pump, maybe ?"

Grange nodded. " Quite possibly, Ed. After all, if the crew was weak, the ship wouldn't have a thorough check over before blast off. It's a long, tedious job."

They turned back to the work in hand. Silence reigned, punctuated by Kennedy's insidious *slurp-slurp*.

Kimberly said, " This diary has an item about all the men befriending many of the small animals that played around the ship all day. There's a remark about, " poor Perkins not having a pet !"

Bessmer rose and filled one or two cups with coffee. He straddled across his chair and leaned on the back.

" I've a theory about all this." He addressed the company at large, his cup precariously balanced.

" Let's hear it, then," Grange prompted, settling himself more comfortably.

" I think we're up against a—what shall I call it ?—a defence mechanism. All living things have one, whether they be human, animal or plant." He took a quick gulp of coffee, and, obviously warming to his subject, continued, " it might be intelligence, or merely physical, like odour or spikes or armour plating or natural camouflage."

Doc interrupted, " This is interesting. There's hundreds of examples in nature—"

" Why not let Karl tell it ? After all, he *is* the ecologist and it is his theory."

" You're right, I suppose, Ed. I was just trying to show off my little bit of learning."

" Anyway, if it's examples you want, here's a few," Bessmer carried on. " We all know about the lizard, of course."

They saw by the look on Doc's face that he had meant to tell that one.

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Bessmer winked at him. "No offence, Doc, but nature has endowed her offspring with far more subtle weapons than that. Some spiders, for instance, are mimics. They scuttle about holding their front legs up to resemble the antennae of ants and manage to fox a lot of their natural enemies that way."

"Talking of spiders," Doc cut in smoothly, "I read somewhere about a species of centipede that hangs out in some of the former American deserts. Whenever its arch-enemy, the tarantula, comes along in search of a meal, the centipede releases a stink that would knock down a Sirian *brok* and puts the spider right off its food. The spider's belly could be cramped with hunger, but it still couldn't make a meal of the centipede."

He sat back in triumph, beaming all round.

"Well, we never knew you had it in you!" Kennedy remarked banteringly.

"Oh, it was nothing," Doc replied modestly.

"Right. There are two examples of a defence mechanism at work. The survival factors on any world are—must be—basically the same. Stay alive. Killed or be killed. But—" he paused dramatically, "—the methods of survival are as numerous as the atoms in this coffee cup." He pointed to it. Kennedy thought it was an invitation and poured more.

"To hark back to the PET tragedy," Bessmer went on, ignoring the anti-climax, "Doc proved that all the men experienced starvation—except one. That man—what's his name?"

"Perkins," Kennedy supplied.

"Perkins—he broke his leg and was confined to the ship. Lieutenant, under normal circumstances, we would eat our meals outside the ship?"

Grange agreed. "It's good for everyone to take advantage of as much fresh air as possible. Spacemen spend a lot of time in their cans."

Satisfied, the ecologist continued, "Something that couldn't get into, or wasn't *allowed* into the ship killed those men. Also," he added, swirling the dregs around the bottom of his cup, "we have a force-fence round this area. Therefore, the something that wasn't in the PET ship and which isn't inside our field—except in a cage—affected only me, because I work with the animals."

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" But there's about forty or fifty different species down in the cages," Harrigan protested, breaking his silence. For the most part, he preferred to smoke and listen. He stuffed tobacco into the pipe bowl. " How are you going to pick out the culprit ?"

" And," Kimberly asked, " where is all this leading ? What have the animals to do with it ?"

Everyone listened with cocked ears for his answer.

" Oh, I know the animal all right, and I think I know how its defence mechanism works," Bessmer replied evasively. " Could you have a light rigged up, and trained on the cages, Lieutenant ?"

" Anything you say," Grange said, calling Cutter. Soon the cages were under the glare of a powerful lamp, set up in the airlock.

Bessmer stared out. After a minute or two, Kennedy demanded impatiently, " Well, what is there to see ?" He peered down at the animals. They were creating hell at being roused.

" What Bart and I saw just before the alarm sounded," the ecologist replied, evading Kennedy's dripping cup.

" See where those snuggles are ?" He pointed.

" In the panther cage !" Moore exclaimed, jostling Kennedy and upsetting his coffee. The soil analyst favoured him with a frosty smile.

Bessmer stated, " That beast would eat anything—and yet it hasn't touched the snuggles—because it *can't*."

" But I still don't understand," Kimberly complained plaintively, furrowing his brow.

" I'll explain aloft. Thanks for the light, Sergeant."

They trooped dutifully out of the airlock and back to the room.

Bessmer wasted no time.

" We've run up against an almost unbelievable defence mechanism. A snuggle can scare off predators by exerting mental influence on the pituitary gland. *It can sense when they're hungry* !"

" You're crazy !" Kennedy scoffed, giving way to his first reaction, but he didn't seem too sure of himself.

" Am I ? The ecologist rounded on him. " I worked with the snuggles more than the other animals. I made pets of them. And I was the only one to show any signs of being off my food."

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In the face of such belligerent conviction, Kennedy wilted.

Harrigan, accepting Bessmer's theory, sucked at his pipe. " It's likely that the snuggles' defence mechanism is meant to scare off animals temporarily, not actually kill them. That would soon upset the ecological balance. Karl will bear me out there. They would wander off and kill something else."

Cracking his knuckles reflectively, Thornton sat on the edge of the table.

" Unfortunately, it *did* kill the PET men." He frowned. " I've a feeling that the highly organized nervous systems of human beings had something to do with it."

" We've achieved what we set out to do, thanks to Karl here," Grange remarked, surveying the men.

" Is the job finished then ?"

The officer glanced at Harrigan.

" Strictly speaking, yes."

" Meaning what ?" Moore prompted.

" This. If we could suggest a solution to this problem, it would be a feather in our collective cap. That would mean more credits, better chances of promotion. The *Quo Vadis* is the top trouble-shooter ship. We could become its top field team—or you people might even be in line for Advisory Board positions."

Sniffing, Kimberly scratched his ear. The latter idea obviously appealed to him. It meant social prestige, which was essential to a man like Kimberly. Grange could almost hear the wheels going round.

" Anyone with any ideas ?" he enquired hopefully.

Grange said, " I'm going to contact Captain Watson."

Harrigan leaned back in his tipped up chair and chewed thoughtfully on his pipe stem.

" Here's a start. The snuggles must broadcast on a certain frequency. Surely it ought to be possible to jam or scramble that waveband ?"

" A micro-jammer might do the trick," Moore suggested. " Every colonist could be provided with one."

Doc commented, " It might be surgically implanted."

Kennedy contributed, " Sparks ought to have some bright ideas on the subject."

Grange came back, interrupting the conversation.

" The ship will be on her way soon. We have to be ready to meet her in the orbit."

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Bessmer cocked his head and eyed the officer keenly.

"You look like a man with good news. Give."

Grange grinned widely, and hauled in a chair.

"Watson's as pleased as punch. He's going to recommend you all to the Board; you know what that means—"

Bessmer jogged his arm.

"What about you?"

"The captaincy of one of the ships pushing out to Canopus"

They descended on him, pummeling his back and pumping his hands and shouting congratulations. Flushed and feeling sore all over, Grange sat puffing in his chair.

Kennedy gazed owlishly into his empty cup.

"Let's have some more coffee."

"Coffee, hell!" Grange exclaimed, rising. "Have you no ambition? Sergeant Cutter. Whisky!"

As usual, the Marine had anticipated his wishes.

Donald Malcolm

THE LITERARY LINE-UP

Next month John Brunner's first novel-length story commences as a serial. It's entitled "Threshold Of Eternity," and is as different again as any previous serial we have published. Basically it is a Time travelling story—but one of galactic scope and magnitude seldom seen in science fiction in recent years. There will be a new novelette by Robert Silverberg, too, plus a number of short stories.

Story ratings for No. 61 were :

1.	False Alarm - - - - - -	James White
2.	Defiance - - - - - - -	Kenneth Bulmer
3.	QRM - - - - - - -	Richard Wilson
4.	Gesture of Farewell - - - -	Brian W. Aldiss
5.	Fresh Start - - - - -	Arthur Sellings
6.	For Men Must Work - - -	Frank B. Bryning

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The International Geophysical Year is now well advanced and the many scientific investigations taking place round the Earth are maturing rapidly. It is far too early to receive any specific reports from these investigations but in this two-part article you will find details of progress so far.

PROGESS OF I.G.Y.

By Kenneth Johns

Part One of Two Parts

1. The Earth Their Laboratory

After a two-year build-up of men, machines and ideas, the International Geophysical Year began on the 1st July, 1957.

Possibly the most important and certainly the least publicised feature of the IGY has been the amiable planning and co-operation of the participating countries, so far unmarred by any government standing on its dignity and claiming that it is the biggest or the first or the foremost.

An example of this spirit of co-operation was shown by the Russian Antarctic research ship *Ob* calling in at Wellington, New Zealand, when her crew of sixty-nine and her fifty-three strong scientific staff were only too happy to show visitors around their ship and give talks on their programme. In addition, when Australian scientists made a two-day visit to the Soviet base at Mirny, the Russians suggested a much wider exchange of research workers between the bases being run by the twelve nations in the Antarctic.

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When the Danish government discovered that the cost of an expedition to cross the great ice-cap of Greenland was too much, an International Expedition was quickly financed. Already, a five-man team of French scientists has parachuted onto the bleak two-mile high plateau with sixteen tons of stores and instruments and wintered there to record preliminary data.

Scientists have spent these important twenty-four months in planning, building over a hundred research stations, stockpiling stores and moving themselves and their equipment—often bulky as well as complex and delicate—to the remotest parts of the globe. In one instance it took nine months for one ton of instruments to travel via normal transport routes to Central Africa.

In theory, on the first of July, scientists over the whole world began their work, getting down to their task of measuring the mysterious phenomena which are interwoven into the complex we know as The Earth. But, in fact, the work began during the build-up period and the programme has been accelerating smoothly to its present speed. And it will continue to accelerate for some time. As the groups grow more proficient with their units and the far-ranging communications system that binds the whole into one coherent awareness the tempo will settle into a thrum of heady activity.

It is as if the human race has suddenly developed a co-ordinating racial brain which has eighteen months in which to use men as its tools to study its parent planet Earth.

Logistics lessons hardily learned in World War II are being applied to Antarctica instead of Europe and the Pacific. But the best of the old tricks are not being swamped by the new know-how. Whilst the USA used a ten-ship transport unit to ship thousands of men with their stores, prefabricated buildings and mechanical transport to set up Antarctic bases, the eight-man team that is to cross the white continent wintered under canvas with husky dogs in the classic tradition.

Participating nations did not enthusiastically receive an American proposal that the IGY in Antarctica should be extended by a year—rejecting it on the grounds that the extra cost was not justified as the data could not be correlated with similar measurements elsewhere on the globe. Too, there was the thought that semi-permanent bases might raise arguments over territorial rights on the Antarctic mainland.

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Eight fellowships have been granted by Unesco for training IGY scientists and the USA is making a gift of the six £20,000 Schmidt cameras to be used in tracking the satellites outside America. A fine display of IGY materials was on show at the popular exhibition at the Science Museum, which closed on October 31st, 1957.

This vast IGY organisation demands rapid communications and the first test of the system by which observatories flash warnings of solar disturbances from one hemisphere to the other took place when a message from the World Warning Centre at Washington, D.C., took 2 hours 12 minutes to reach London via Paris.

The fifteen sections of the IGY have held many meetings in many countries to co-ordinate the work of the sections and of certain geographical areas.

And still new projects are being planned and undertaken.

Merchant Navy and radio station officers near the Equator have been asked to watch for the aurora above the Equator at times of pronounced solar activity.

Denmark has announced that she will make an intensive survey of the North Atlantic and Arctic Sea, recording details of salt content, temperature and currents to parallel the similar survey of the Antarctic Ocean.

Iran will play the most prominent part in the Near East with a series of geomagnetic and gravity measurements over her immense barren plateau. She is to receive one of the Schmidt cameras, as the first American artificial satellite should pass over her.

It was decided in January 1957 to include a study of the radio-activity of the Earth and upper air in the IGY. Samples of rainwater and filters used to trap dust in the upper atmosphere will be sent to central laboratories for accurate radio-activity measurements. Just as important will be an attempt to estimate the radio-activity of past snow by analysing unmelted glacial ice. Each year's snowfall adds a distinctive band, and it is hoped to trace back fifty years—well into the pre-atomic age !

To measure cosmic ray intensities four miles above the North Pole, a cosmic ray counter was flown from Scandinavia to Alaska to Tokio and back again. First analysis of the results show the existence of a Cosmic Ray North Pole separate from the magnetic and geographical poles. Another

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cosmic ray counter was carried by ship around South Africa, making a continuous set of measurements at sea level.

Preliminary data shows that we in Europe ride a colossal bucking bronco. The whole of Europe rises and sinks a total of 16 inches twice a day. This is due to elastic tidal changes in the Earth's crust and so fifteen of the twenty-seven gravity measuring instruments to be used in IGY—they can detect changes of a hundredth of a millionth of a g—will be sited in Europe to check on this movement.

Although the sunspot cycle will be at maximum during IGY there will be only one total eclipse of the Sun, and this will be seen solely in the Pacific. Various nations—from Britain, Cambridge Observatory have undertaken the job—will send expeditions to the New Zealand-owned Danger Islands to observe the eclipse. The Cambridge team is to concentrate on measuring the spectra and temperature of the middle and outer solar corona.

The challenging possibilities of the mysterious world of underocean are being met with high hopes of important new discoveries. Echo-sounding surveys of ocean beds, together with dredging and core sampling deep in the pelagic ooze have been carried out by Antarctic supply ships. A new species of crustacea was dredged up from a depth of three miles. From their measurements and samples, the Russians have concluded that the Antarctic glaciers have receded 20 miles since the last Ice Age, whilst the general height of the inland ice has dropped half a mile, findings in keeping with the general idea that most of the world glaciers are retreating.

The Russians are planning to anchor robot underwater stations in the Pacific to record the temperature and wave oscillations in deep-sea strata. They are also continuing with their long-term ice-floe plan in the Arctic Sea. The seventh drifting ice-floe station—a hutted town afloat like a ship—has been manned by a staff of forty. Their third station drifted four thousand miles in three years.

An unpopular suggestion by the seismologist chairman of the Australian IGY committee was that at least three atomic bombs should be exploded—one off Australia, one in the Central Pacific and one in Russia—so that the earth tremors could be recorded as artificial earthquakes and so lead to more information on the composition and properties of the very structure of the Earth itself.

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Down in the White South, Antarctica has never before seen such human activity.

The Americans landed a plane at the South Pole on November 1st and stayed only forty-nine minutes—the first men to set foot on the pivot of the Earth since Scott and his party left—before having to use emergency rocket power to unglue their aircraft's frozen skis. On January 24th, 1957, the US South Pole station was inaugurated and named the Amundsen-Scott Base. But the fifteen men building and manning it had a rough and uncomfortable time with the intense cold. They were not cheered when they had to dig supplies out of fifteen feet of snow where they had plunged from supply planes.

Some of the worst Antarctic weather was met in January, when gales and drifting ice smashed a propellor blade of the USS *Staten* and drove a five-foot hole in the hull of USS *Arneb*. Tragedy struck when a tractor broke through the ice and killed one man at a US Coastal base; a similar accident to those that killed an American and a Russian in 1956.

Australians set up a record with their large hangar built at Mawson base in a 65 m.p.h. gale and at minus 52 degrees Fahrenheit. The hangar proved of sterling value in servicing aircraft during the two-month Antarctic night, enabling them to be kept flying all the time to complete the ten thousand square mile aerial survey. A Russian plan to fly supplies from Russia to Mirny in three 4,000 mile jumps via Australia has not yet matured.

Three strange areas free of ice, known as oases, are known in Antarctica. One is in Queen Maud Land, another at Vestfold Hills and is the site of the second Australian base, and the third, the 300 square mile Bunger Oasis, is 250 miles from Mirny and is occupied by the third Soviet base. These oases are one of the minor mysteries of Antarctica, being surround by thick ice; and exotic reasons such as hot springs, volcanic fires and radio-activity and even underground coal fires have been called into being to explain their existence. Now it seems that a more down-to-earth explanation is the answer; deep valleys on either side of an oasis divert the path of glaciers and the wind is strong enough to blow the snow away from the surface. During the summer the naked dark rocks absorb sun heat, ice is melted and accumulates in lakes of warm water and enough heat is stored to give it a micro-climate of its own.

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One problem met and partially solved was that of grounding electrical generators perched on several hundred feet of solid ice. The humidity of less than ten percent prevented static charges leaking away and the resulting interference almost destroyed radio reception. It was often found easier for the British base to contact London than the base on the opposite side of Antarctica, separated from them by the auroral region and its interfering ionisation.

The first all-sky automatic camera has been in operation for a year at Halley Bay, and has shown that a permanent auroral band lies along the 20 degree parallel of geomagnetic longitude. This work is being extended with the one-and-a-half-ton radar unit which is to be used at Halley Bay for tracking meteor trails and auroral displays.

The world is a large place by the standards of Man, even though we can recognise with our imaginations the smallness of our planet in the swarming star-filled oceans of space. With all our modern scientific and technical progress, we are not too far removed from shambling creatures who grunted their way about a world new to them and began to play with bits of flint and bone and fled in terror before the great destroyer, fire, and devised ways and means to trap and eat the other animals sharing that primeval dawn. And it is sobering to remember that we are almost rubbing shoulders in time with men who were prepared to torture and kill because another had said that the world was not the Centre of All and dared suggest that it revolved around the Sun.

There is much to learn about our own world, and what we learn and even, possibly, more important still, the way we go about learning, will have far-reaching repercussions when we reach out to the other planets of the Solar System.

And that yearning for the stars is tied up, too, in another way with IGY. Elsewhere on the surface of the Earth, technicians and scientists have been forging two other weapons for the attack on the secrets of the Earth. The men who study the depths of the Earth and the Oceans, who venture to remote, hostile crannies of the globe, who patiently study the information fed to them by instruments scattered all over the surface are one in spirit with the men who are planning robot tools to reach up into the sky beyond the Earth. Examining the garments of the Earth, flying up where Man cannot yet venture, IGY is unleashing a great fleet of rockets and artificial moons to explore the upper air—and space.

To be concluded

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THE HALF PAIR

Bertram Chandler continues his series of cameo stories with one based primarily on the human emotions, showing that certain instincts can be far stronger than the mind would consciously allow us to believe.

By Bertram Chandler

"Nothing," he said, "is more *infuriating* than a half pair of anything."

"I've said that I'm sorry," she replied, in a tone of voice that implied that she wasn't. "But you're making such a *fuss* about it. Who gave them to you? Some blonde?"

"I gave them to myself," he replied sulkily. "It so happened that the need for a decent pair of cuff links coincided with my having enough money to buy them. I've had them for *years* . . ."

"And you were very attached to them," she said. "Don't cry. Mummy will buy you a new pair when we get back to civilisation."

"I want a pair *now*," he said sulkily.

"But why?" she asked, genuinely puzzled. "We're alone together in this tub of ours, half way between the Asteroid Belt and Mars, and you have this insane desire for a pair of cuff links . . ."

"We agreed," he said stiffly, "that we weren't going to let ourselves lapse, get sloppy, the way that some prospecting couples do. You must remember those dreadful people we met on PX173A—the ones who asked us to dinner aboard their ship. He dressed in greasy coveralls, she in what looked

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like a converted flour sack. The drinks straight from the bottle and the food straight from the can . . ."

"That," she told him, "was an extreme case."

"Admittedly. And my going around with my shirt sleeves rolled up, or flapping, would be the thin end of the wedge." He brooded. "What I can't get over is the *clottishness* of it all. I go through into the bathroom to rinse out my shirt. I leave the cuff links on the ledge over the basin while I put the shirt on the stretcher to dry. Picking up the cuff links, to transfer them to a clean shirt, I drop one into the basin. It goes down the drain. I hurry to the engine room to get a spanner to open the pipe at the U-bend. I return to find you filling the basin to wash your smalls. I tell you what's happened—and you promptly pull out the plug, washing the link over and past the bend . . ."

"I wanted to *see*," she said.

"You wanted to see," he mimicked. He brooded some more. "It wouldn't be so bad if this were one of the old-fashioned ships working on an absolutely closed cycle. All that I'd have to do would be to take the plumbing adrift foot by foot until I found my cuff link. But with more water than we can possibly use as a by-product of the Halvorsen Generator, and all our waste automatically shot out into Space . . ."

"Anyone would think," she said, "that you'd lost the Crown Jewels."

"My cuff links," he said, "mean at least as much to me as the Crown Jewels mean to the Empress."

"I've told you," she flared, "that I'll buy you another pair !"

"But they won't be the same," he grumbled.

"Where are you going ?" she demanded.

"To the Control Room," he answered briefly.

"To sulk ?"

"No," he said. "No, my dear. No."

She lost her temper when the tangential rockets flared briefly to kill the rotation of the ship around her longitudinal axis. She was in the galley at the time, preparing spaghetti for dinner. Spaghetti and Free Fall don't mix—or they mix all too well. She did not wait to clean the clinging, viscous strands from her face and hair, but went straight to the Control Room, pulling herself along the guide rails with a skill that she had not been aware that she possessed.

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"You . . . . You butterfly-brained ape!" she snarled. "Since when can I do without gravity—even though it is only centrifugal force—in the galley? You've ruined dinner."

"I," he said proudly, "have found my cuff link. You know how the garbage ejection system works—all waste is flung out tangentially, by centrifugal force, at right angles to the line of flight. There was, I thought, just the smallest chance that anything metallic would show up on the screen, especially if I killed the ship's rotation. I stepped up the gain and the sensitivity, too."

"So?" she demanded. "So?"

"There it is," he said, pointing happily to the beam-bearing fluorescent screen that circled the Control Room. "Do you see it—that little blip that could be a tiny satellite. It *is* a tiny satellite, come to that . . ."

"So you know where it is," she said. "Just three hundred metres away, and spiralling outwards all the time. And for this piece of quite useless knowledge you've ruined dinner."

"It's *not* useless knowledge. What do you think we carry spacesuits for?"

"You aren't going out," she said. "Surely you aren't. Even you couldn't be such a fool."

"Just because *you*," he replied, "happen to have a phobia about spacesuits."

"And whose fault was it that the air tank was three-quarters empty?" she asked.

"Yours," he said. "Everybody knows that whoever is wearing a suit is supposed to make a personal check of every item of equipment before going Outside."

"Some women," she said, "are fools enough to trust their husbands. They're the ones who haven't learned the hard way, the same as I did."

"Some men," he replied, "are fools enough to kid themselves that their wives have an elementary knowledge of plumbing." He gestured towards the screen. "There's my cuff link—and I'm going after it."

"You'll never find it," she said.

"Of course I shall. I'll have my reaction unit with me, as well as a lifeline. I'll push straight off from the ship, from the airlock—it's only a couple of metres for'ard from the scuppers. Then you'll be watching the screen, and you'll talk me into a position where I shall intersect the orbit of the cuff link."

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"You don't really mean it," she said. "You must be insane."

"No more insane than you were when you pulled out that plug. Less so."

"But . . . But anything might happen. And you know that I can't wear a suit again, that I can't come out after you, until I've been reconditioned . . ."

"Nothing will happen," he told her. "Just you sit and watch the screen and talk me into position. It's the least you can do."

He pulled his spacesuit out of its locker, began to zip and buckle himself into the clumsy garment.

He should have known better. He should have considered the fact that the rules made by the Interplanetary Transport Commission are wise ones, and that Rule No. 11a is no exception. "No person," it reads, "shall venture into Space from his ship unless accompanied by a shipmate." The Rules, admittedly, are all very well for big ships swarming with almost redundant personnel—but the skipper-owners of the little Asteroid prospectors who ignore them rarely live to a ripe old age.

Unlike his wife, he had never had any trouble with spacesuits—and this, perhaps, made him careless. He hung motionless on the end of his lifeline waiting for the first instructions to come through his helmet phone. They came at last, grudgingly.

"Aft two metres . . . Hold it! Out a metre!"

His reaction pistol flared briefly.

He saw the cuff link sailing towards him then—a tiny, gold speck gleaming in the sunlight. He laughed. He stretched out both hands to catch it—then realised that one of them was holding the pistol, his right hand, the hand with which he would have to grab the little trinket as it passed. He tried to transfer the pistol to his left hand and, in his haste, let go of it. It sailed away into the emptiness.

What does it matter? he thought. It's covered by insurance, but my cuff links aren't . . .

"Got it!" he shouted into his helmet microphone.

The return to the ship would be easy—all that he would have to do would be to haul himself in on the lifeline. It was then that he made the discovery that drove the jubilation from his mind. Somehow—it must have been when he dropped

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the pistol—the line had parted; the Asteroid Prospectors are notorious for their cheap, secondhand gear. Slowly he was drifting away from the ship. There was nothing that he could throw against the direction of drift to check himself—nothing, that is, except the solitary cuff link, and its mass, he knew, was too small to have any appreciable effect.

"What's wrong?" asked his wife sharply.

"Nothing," he lied.

She'll never get into a spacesuit while she has her phobia, he thought. And even if she does—it'll be too risky. There's no sense in both of us getting lost. Goodbye, he thought. Goodbye, my darling. It's been good knowing you. Sell the ship and get back to Earth . . .

"What's wrong?" she asked again, sharply.

"Nothing," he gasped—and knew that even though the gauge on his tank had registered the full twelve hundred pounds there was nothing like that pressure in actuality.

"There is something wrong!" she shouted.

"Yes," he admitted. "Promise me one thing—when you get back to Mars demand a survey of all the equipment sold by Sorensen, the ship chandler. And . . . And . . ." He was fighting for breath, holding off unconsciousness. "It was all my fault. And look after yourself. Look after yourself—not me . . ."

He fainted.

He was surprised when he awoke in his bunk. He was surprised that he awoke at all. Her face was the first thing that he saw—tear-stained it was, and dirty—and happy. He saw then what she was holding—a clean, white, glistening shirt with, at the end of each sleeve, gleaming cuff links.

"You came Outside," he said softly. "You brought me in . . . But your phobia, darling . . . Your spacesuit phobia."

"I found," she said, "that I have an even stronger one. It's the same as yours." She bent down to kiss him. "I do so hate half a pair of anything—and I don't mean only cuff links!"

Bertram Chandler

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We felt that these quotations and definitions were too good to miss and include them here for your amusement. No prizes are offered for defining the source of each quotation.

QUOTATIONS

By Iris Harvey

"Neutrinos are perhaps two-thousandths the mass of an electron and have no charge by which they can be influenced electrically for they pass through matter as if it were not there." — *Morons.*

"There is a theory that there are not only neutrinos but anti-neutrinos ; when the two meet they annihilate one another." — *Dictators.*

"Water required most heat of the five substances to reach 212F, therefore gave off most heat, travelled the farthest." — *Genius.*

"When iron sulphate and caustic potash are brought together the SO_4 ions leave the iron to unite with the potassium." — *Divorce.*

"It frequently happens that a compound which is formed at one temperature breaks up at another temperature."—*Marriage.*

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" We can picture it vividly if we think of these two charged particles, a single electron and a single proton, rushing together under their mutual attraction, with ever increasing speed, until finally they coalesce ; their electric charges then neutralise each other, all their combined energy is set free in a single flash of radiation."— *Passion.*

" When fresh water is forced into the wells it will form a dyke of saturated gravel that will keep the sea-water from entering the pumped out basin," — *Greshams Law in Reverse*

" If an electric current is passed through water the liquid is broken up into hydrogen and oxygen," — *Co-respondents.*

" The new shells have proximity fuses that explode them as soon as they feel hardware ahead." — *Nymphomaniacs.*

" At the Chubb Crater the mine detectors were scarcely more useful ; they gave too many indications, squealed excitedly whenever they were brought near an ordinary granite boulder."— *Sex.*

" Officers at the R.A.F. establishment at Farnborough learned that a planned explosion (Socialism) set off at the right time, may prove to be the best way to prevent an accidental explosion (Communism) from getting out of hand." — *Communism—Socialism.*

" Mesons are the particles which are thought to be connected with the binding force that holds atomic nuclei (Mr. Churchill and President Roosevelt) together." — *The Late Mr. Harry Hopkins.*

" At the Burning Spring Well in Canada the Spring appears to burn fiercely when a lighted match is touched to it. The water becomes agitated as though boiling, but in reality it is ice-cold." — *Teasers.*

" An alpha particle and a nucleus repel each other with a force that is enormous when the distance between them becomes very small." — *Love in a Cottage.*

" When an atom is violently torn into two pieces by a neutron, the enormous amount of energy that bound the pieces together is released." — *A Widow.*

" Anti-hydrogen cannot live in peace with ordinary matter, but anti-matter should be static so long as it stays with its own kind." — *Eccentrics.*

" A fast breeder " reaction which produces more fuel than it consumes." — *A Good Citizen.*

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" As far as physics is concerned the anti-world would be identical with our world. An anti-egg would taste like an ordinary egg to an anti-man." — *Lunatics.*

" The cancer process begins when cells are injured by being starved of oxygen (love). The injury is irreversible. The cells that survive, although maimed, get their energy by fermentation in an abnormal way." — *Mixed-up birds.*

" The gas, nitric oxide, is not consumed by the re-action that it triggers." — *A cold sensualist.*

" Neutrons, since they have no electric charges, do not leave tracks in photographic film." — *Ordinary people.*

" Anti-protons cannot exist in contact with ordinary matter. This makes anti-protons hard to find in nature which is loaded with ordinary protons lying in wait *to destroy* them."— *Dreamers.*

" An atomic pile when it " goes critical." — *Inspiration.*

" Free radicals, fragments of molecules, free to form new chemical compounds." — *Democracy.*

" Metal fatigue—when there has been too much strain for too long on a piece of steel, the molecules re-arrange themselves." — *Revolution.*

" If an electric current is passed through water, the liquid is broken up into hydrogen and oxygen." — *Rock an' Roll.*

Bev-particles — *An American grandmother.*

" At first the lonely atoms (individuals) form a very thin gas ; they draw together by gravitational attraction. At last, after billions of years, the atoms gather into stars (tribes), and the stars into galaxies (nations). Because of some unknown property of large scale space, the galaxies then fly apart (war)."

" In such pair formations, about two Bev of energy is turned into matter. This is the reverse of the action in atomic bomb where matter turns into energy." — *A bore.*

Iris Harvey

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TO PERCY

Most stories of interstellar travel usually contain references to " hyper-drive "—meant to infer that a spaceship is capable of travelling faster than light. How else could our voyagers visit other star systems ? Seldom, however, does an author take the " hyper-drive " theme as the basis for his plot, and we feel that Alan Barclay has produced an extremely commendable effort in the story which follows.

By Alan Barclay

Lieutenant Edward Arthur Franklin was so new to the place and so uncertain of himself and his knowledge of the local rules and customs that the commonplace procedure of stacking a selection of food on a tray at the self-service counter and carrying it over to one of the tables was a very considerable ordeal for him. At the counter he bumped elbows with an officer who growled something in Spanish.

" Very sorry," he exclaimed hastily.

The Spaniard who seemed about seven feet tall, did not bother to reply.

On his way over to the tables another officer, a very senior type, gave Franklin a swift up-and-down look.

In one experienced look, taking in rank, badges, campaign medals, age and cut of uniform, complexion and expression, any service man can deduce the whole official history of another, so there was nothing unusual about this inspection. But it made young Franklin wonder whether his uniform was incorrectly buttoned.

He sat down at an unoccupied table, removed the plates from the tray and stacked the latter away. He was eager to

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make friends and hoped that someone would sit beside him presently and make conversation, but when two people did come over to his table he suddenly felt he must not seem anxious to butt in on their talk, so he stared conscientiously down at his soup.

Somehow, without even glancing up he became aware that one of his neighbours was a civilian, and the other a service type. The civilian was big, fattish and round; he spooned his soup up with his left hand. The officer, who wore U.N. Space Service uniform with a Colonel's badges and the lion rampant crest of Great Britain on his shoulder, was a tall, big-boned fellow with an eagle beak of a nose and an impatient slightly arrogant manner. Franklin noted also the rocket-flare of the space-pilot on his chest.

These two exchanged nothing more than a grunted word or two with each other while they tackled their soup, and Franklin began to suppose that they meant to ignore him. Being shy and inexperienced in the business of holding conversation with strangers he first of all felt relieved at this; but also and quite illogically he was ready to be annoyed should they behave unsociably to a newcomer like himself.

However, the tall Colonel—although he was a Colonel he was quite a young man, Franklin noticed—pushed away his soup plate and looked across the table.

"You're a new boy in the Mess, Lieutenant?" he asked. His manner of speech was abrupt, but he smiled in a friendly fashion.

Franklin immediately stopped feeling resentful.

"Yes, sir," he replied. "I arrived on the Moon five days ago."

"So!" the Colonel nodded, observing Franklin's extremely new uniform. "My name's Mangani, but I'm an Englishman despite that. This large gentleman on my left who's making such a success of inhaling his soup is labelled Dr. Towster." Dr. Towster glanced up, nodded absently, and returned to the business of the soup.

"My name's Franklin, sir."

"A good reliable English name," Colonel Mangani said, then added: "You don't have to call any senior officer 'Sir' in the Mess. That fashion went out fifty years ago." His tone almost made this a rebuke.

Franklin flushed.

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" You should write a book of service etiquette." Dr. Towster took time off from his soup to say this in a deep booming voice.

" What's your branch of the Service ?" Mangani continued.

" I'm in Stores and Equipment; I'm with Major Underwood." Franklin explained. His was one of the unglamorous branches of the service, as he well knew. The spotlight of public attention shone only on the navigators and pilots of the space vessels, and occasionally—in a different sort of way—on the scientific officers in the research and development groups.

" Ah !" Colonel Mangani exclaimed, " Then we'll be doing business with one another regularly. We have a lot of trouble with the stores."

" Stores procedure's deliberately organised to cause maximum delay and frustration to busy people like ourselves with a job to do," Dr. Towster boomed.

" You're mistaken, sir," Franklin objected, flushing again. " Stores exists to serve the operational and development branches; like any organisation it has rules and procedures and we must stick to them, but—but if any procedure is obstructive it can be altered."

Dr. Towster laughed. " No personal insult intended, Lieutenant. But I think your honesty and high principles must wilt considerably in the blighting atmosphere of Moon Base Stores section as run by our good Major Underwood."

" Sir," Franklin told him stoutly. " I think you're wrong."

" Of course he's wrong," Mangani agreed. " Neither the job nor your boss need spoil you. No man is entirely the victim of his circumstances." He said this with a sort of high-falutin fervour.

Dr. Towster glanced sideways at his companion, and then —for no reason that was apparent to Franklin—winked across at him.

" I see there's some danger of this conversation acquiring a tone of high morality and noble principle," Dr. Towster exclaimed, " which is a thing I can't stand. So let's prevent that by having some beer. One can't be over-sanctimonious on beer." He made a series of signals—which included the holding up of three fingers—to a mess-waiter, and as if by magic three tall glasses were placed in front of them. " Try our Moon brew," he urged Franklin. " Mangani will tell you it's nothing like a genuine English ale, and as a matter of fact,

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I agree—I think it's a whole lot better." He lifted his glass. "Here's to Percy."

"To Percy!" Mangani echoed, dipping his eagle beak into his glass.

"You must say it too," Towster told Franklin.

"To Percy!" Franklin repeated obediently, though he had no idea who Percy was or why he should be honoured in this fashion.

He discovered that Moon-brew certainly did differ in some respects from English beer. For one thing, its alcohol content was about three times as high and consequently he found it a little difficult to get through the rest of his day's work.

The officer i c Technical Stores at Moon Base was Major Underwood. When Franklin asked who Colonel Mangani and Dr. Towster were and what their duties were, Underwood laughed. His laugh contained a high percentage of sneer.

"They're all that remains of the hyper-drive development brigade," he explained. "You must know the space-warp business. It's a sort of scientific magic wand which will transfer a whole ship and its crew from here to Antares in half a second."

"Sure, I've heard of it," Franklin agreed with some excitement. "About ten years ago when I was at school I read that the problem had been solved in theory. There was a very considerable stir about it at the time. Not much has been said about it since."

"In my opinion it was never anything more than a piece of mathematical hokum," Underwood told him contemptuously. "The thing's obviously impossible. Even without a specialist knowledge of mathematics one can understand how aeroplanes and space-craft operate; they're straight-forward practical devices and their operating principles can be explained by diagrams, but this hyper-something can only be described by means of a mathematical equation.

"Take it from me, Franklin, I've been around this corner of space for quite a number of years now and I've usually found that my own supply of sound common-sense gives quite a reliable answer to every question, even if I haven't had a chance to learn advanced mathematics. Why," Underwood continued with rising indignation, "I've heard this joker who claims to have solved the hyper-drive problem had to

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cook up a new kind of mathematics to prove his case. If that isn't a piece of pure fakery, my name isn't Underwood."

Franklin was a conscientious and enthusiastic young officer, not very much disposed to be critical of his superiors, yet nevertheless he felt that Underwood's complexes were beginning to show a little.

"But a good deal of practical experimental work has been done on the theory," he objected.

"It has indeed," Underwood agreed. "There's been an Interstellar Development Group out here on the Moon for the past ten years and I hate to think how many millions they've wasted in that time. However, that piece of nonsense has been stopped at last. The Group's been closed down except for Mangani and Towster and their team of technicians and mechanics of course, and I don't suppose they'll be allowed to continue much longer."

"I must say I'm sorry to hear this," Franklin admitted. "The idea of getting across to other star-systems has always seemed wildly exciting to me. What happened to make U.N. close down the project?"

"Well, there's been ten years during which millions upon millions have been poured out without any result. Frequent promises from Research Directors—oh yes, the project rated a Research Director at one time—that success was just round the corner. Recently there have been admissions from some scientists that the theory is simply an interesting scientific curiosity with no practical application. Finally there was the accident . . ."

"The accident . . .?"

"A ship fitted out with this so-called hyper-space device was tried out—and simply vanished with all its crew. Publicly the thing was reported simply as an unexplained loss out in space, but I happen to know the investigating committee said hard things about rash and ill-considered trials."

"But even so," Franklin suggested doubtfully, "if the ship vanished that seems to prove the hyper-space theory's not all eye-wash."

"I wouldn't know," Underwood told him. "I was never given the opportunity to study science, so I'm not qualified to judge. But the U.N. Committee didn't think so, and the project was closed down, except for Colonel Mangani and his friend. Mangani's an ambitious crack-pot with dreams of fame and glory," Underwood added contemptuously. "I

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happen to know he accepted Captain's pay and loss of seniority just to be put in charge of this defunct project. How it's going to help his chances of promotion is more than I can understand. Towster's a civilian, of course." It was evident that to Major Underwood civilians were lesser animals. "He's a sort of scientific hobbyist, interested in nothing but gadgets. No drive, no ambition. A second-rater."

Franklin met the two subjects of this discussion again in the mess dining-room a few days later. Mangani struck him more than ever as a theatrical character. He affected everything English; beer, tailoring, and even English food at a time when the rest of that nation had got around to admitting that it was the dullest and most unimaginative sort of nourishment in the world. His speech was more public school than any public school had ever produced.

However, just when Franklin was on the point of classifying him as nothing better than an actor-type, this estimate was cancelled by Mangani himself.

"Of course, you think I'm over-playing the part of an Englishman," he remarked in his abrupt way. "Perhaps I do. My parents were of mixed nationality, but I felt a strong need to identify myself with one nation. So I chose to be English. I know England and English history far better than most Englishmen do. I've read the life-histories of practically every famous Englishman."

"Especially Nelson," Dr. Towster butted in. "He," pointing at Mangani with his fork, "aims to be another famous Englishman."

"And you," Mangani accused Towster, "have no ambitions of any sort; you're satisfied merely to tinker with scientific problems just as children play with jig-saws."

"To exercise the intellect is an end in itself," Towster pointed out. "And to find a solution to a mathematical investigation is one of man's greatest satisfactions." The words sounded a bit pompous but Franklin suspected the speaker did not mean them too seriously. "Besides," Towster continued, "I have my share of ambition—I hope to be elected a Fellow of the Royal Society . . ."

Mangani gave an impatient exclamation, then instead of pursuing the subject, he turned to Franklin.

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" Enjoying yourself?" he asked in his abrupt way. " Tremendous thrill getting out here, isn't it?"

" Very interesting," Franklin said. " The real thing's so very different from films and television. No amount of description or explanation can get across a true impression of life out here."

Dr. Towster looked across the table at him. " The young man is a polite, well-mannered one," he said reflectively. " But I do detect a slight lack of enthusiasm. Is it possible that you're not thrilled to the marrow to be up here?"

" Well," Franklin confessed, " I volunteered for Mars."

" You're crazy," Towster told him. " There's nothing there but a huddle of plastic domed huts in the middle of a howling wilderness of sand. Here you've got safety and comfort, enough of interest and novelty to satisfy every taste, an opportunity for adventure if you're mad enough to go exploring, and the unquestioned delights and pleasures of Moon City whenever you feel inclined."

" On the other hand, there's a great deal of exploration work waiting to be done on Mars," Mangani said. " It offers opportunities for energetic young officers—at one time I thought seriously of going there myself."

" I joined the Service in order to get out there," Franklin explained mildly. " I was promised there would be no difficulty. I must admit I'm disappointed."

" But you'll find opportunities here for promotion if you look around," Mangani assured him.

" You've made the wrong diagnosis," Dr. Towster told him. " Unlike you, this young fellow isn't suffering from ambition or careerism. It's a different bug that's bitten him—it's a girl, isn't it?"

Franklin blushed. " Am I as easy to read as that?" he asked.

" Oh!" Towster waved a large hand. " There are only three or four primary human urges—money, women, scientific curiosity, speed as provided by some sort of vehicle or other —and of course," he nodded towards Mangani, " ambition."

" So the girl's out on Mars?" Mangani asked.

" Yes," Franklin admitted. " She and I began at College together. Then her father was sent out to Mars as Governor. Mars is a long way away and expensive to reach, and even Governors stay a long time and don't come home on leave.

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It seemed it might be ten years before we met again, so I joined the Service and asked for a posting out there—and got sent here instead."

"Service regulations are pretty reasonable, you know," Mangani told him. "You can apply to have a wife or a fiancee brought out at Service expense."

"I know the regulations back-ways," Franklin replied. "I'm pretty good with regulations. No, sir, she's not my wife and we weren't engaged. Also she wasn't quite eighteen when we last saw each other."

"Not quite eighteen, eh?" Mangani smiled, started to say something, then seeing the look on Franklin's face, checked himself. "There's nothing to stop you making another application for posting out to Mars. It only needs your senior officer to say you're redundant, or unsuited to the duties, or that you're a good type but he can't stand the way you click your teeth. A bit of co-operation from him, and you're all set."

"He won't co-operate, sir. He went two years without an assistant and he's not having that situation again."

"I know Underwood," Towster agreed. "It doesn't surprise me he won't co-operate."

"There are," Mangani proposed, "other girls . . . In fact, in Moon City we have the finest collection of female humanity that was ever collected together in one spot. You might find a cure for your trouble here."

Franklin looked across at him and grinned.

"I see what you mean, sir, but it wouldn't work with me. I'm one of the faithful sort. Stupid, aren't I?"

"I wouldn't say so," Dr. Towster disagreed. "I think we'd all better have some beer now. Otherwise the conversation may become high-flown and sentimental."

So they had some beer.

"To Percy!" Towster said, lifting his glass.

"To Percy!" Mangani echoed.

"To Percy!" Franklin said, doing likewise, then asked: "Would you tell me, please, who Percy is, and what he's done to deserve this?"

"We can't," Dr. Towster said mysteriously. "Percy's classified top secret material. But we can give you a hint. Colonel Mangani and I owe our jobs to Percy, and Percy may still bring us fame and fortune."

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" Doesn't seem very likely just at present," Colonel Mangani grumbled.

Franklin guessed that Percy must be their nick-name for some official at U.N. Headquarters back up on Earth.

Franklin learned, via the military grape-vine that extended its efficient tendrils into every corner of Moon Base, that the Special Project Development Section controlled by Mangani and Towster was working at full pressure. This fact was borne out by the quantities of stores—mostly electronic and electro-gravitic equipment—which Franklin booked out to them.

The N.C.O.'s and technicians in Special Development Section were just about equally divided for and against Mangani and his friend. One half admired them and claimed they were on the verge of an epoch-making discovery. The other half believed them to be half crazy to carry on with this work when better men had declared it hopeless, and prophesied that one day they would set off in the near-obsolete space-can they used for trials, and vanish for ever in a small flash of light.

Franklin gathered, though not from Mangani who was inclined to act his rank when official business was mentioned, that development would soon reach the stage at which something would work or wouldn't.

After he had been in Stores for about two months his friendship with these two characters was interrupted by a serious official row with Mangani. It happened by telephone.

Franklin lifted his phone on his desk. " Franklin here," he said.

" Colonel Mangani here," a voice said. The tones were official and not very cordial. " Franklin, my Tech. N.C.O. tells me you've just refused to issue him with one generator, electric, alternating, micro-phase. I'm sure you have good reasons for doing so, but my reasons for requiring this item are even better. I want that generator. I'll send my original demand note along to you with two of my men. They'll bring a bogie and collect the thing." The voice was calm, unflurried—the voice of a senior officer giving an order, and quite sure that it will be obeyed.

Franklin began to feel extremely unhappy.

" Sorry, sir," he said. " I'm not able to let you have a thing like that. I'd get myself into big trouble."

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"I'm not officially interested in your troubles, Franklin," Colonel Mangani told him coldly. "I need that machine and if I don't see it wheeled into my section within half an hour, I'll have you up for a reprimand. Is that understood?"

Before Franklin could open his mouth to reply the phone clicked.

He thought for a moment, ran a hand through his fair hair, which rumpled it and made him appear ridiculously young and unhappy, then rang Mangani's number.

"Lieutenant Franklin here, sir," he said firmly. "My reasons for turning down your demand were proper ones, and I must ask you to hear them."

"Very well," Mangani said coldly. "Go ahead."

"The machine you asked for is an ordinary fitting, factory produced, classed as workshop equipment. Your workshop rates five of them and has those five already. You can't have more. It isn't research equipment, or special equipment."

"Very well," Mangani interrupted, "I accept the fact that you have correctly interpreted official regulations. I gather that you propose to hide behind those regulations and be as obstructive as possible." Franklin reflected ruefully that Mangani was properly on his high horse this time. "You appear to be typical of the class of Stores clerks. I've nothing more to say to you." The phone clicked for the second time in five minutes. Franklin rumpled his hair some more, picked up a file from his tray, tried for a moment to interest himself in it, then tossed it back and got up. He combed his hair, put on his cap and left his office. Outside in the main corridor he hopped one of the open vehicles which provided transport around the maze of tunnels and corridors and caverns of Moon Base.

It required twenty minutes to reach Colonel Mangani's Special Development Section which occupied one of the smaller ship hangars. One ship lay in the middle of the floor—it seemed a very ordinary small space-craft of an almost obsolete type—and a number of men in white overalls were working around and over it. Along the walls of the hangar other men were busy with machines and parts of one sort and another.

It appeared to Franklin to be an extremely ordinary workshop hangar in which the occupants were engaged onor dinary routine duties. He found it hard to believe that the men here were trying to build a device which would abolish time,

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distance and space. For an instant he wondered whether Mangani and Towster were both quite mad.

Mangani's office was in a corridor off the hangar. Franklin paused outside the door, straightened his uniform, rehearsed in his mind what he wanted to say, and knocked.

"Come in," a voice called.

Franklin entered. Closed the door. Saluted. Stood at attention.

"What the hell do you want, Franklin?" Mangani snapped.

"In the first place, sir," Franklin told him steadily, "a little while ago you called me a Stores clerk and described me as obstructive. I wish to say in reply that I'm employed to administer the Stores section according to certain procedures, and it would not be very much to my credit if I broke these rules under pressure from a more senior officer. I therefore wish to state that I consider your remarks offensive, sir. Secondly, sir, if you will listen to me for about half a minute without interrupting, I can probably help you to get what you want."

For a moment Mangani stared at Franklin, then broke into a roar of laughter.

"Well! Well! My young cock-sparrow," he exclaimed. "So you're a man of fighting spirit. Very well, I apologise. Come and sit down. Have a cigarette."

Franklin did so. His hand trembled slightly as he reached for the cigarette.

Mangani gave him a keen glance. "It took some courage to talk in that fashion," he said in a much more kindly fashion than usual. "But you say you can straighten out this generator bother for me?"

"Yes, certainly, sir. For research and development apparatus you have an annual grant which you can spend as you like. You could, for example, buy one complete ship with it, and nothing else for the rest of the year. But this generator, according to the reference number you quoted is standard workshop stuff, and like everyone else you're limited as to the amount of equipment you may have for your workshop."

"So . . . ?"

Franklin proceeded to give a short lecture which might have been called requisitioning and stores procedure without tears.

"I'll do that. Thank you." Mangani told him finally. "Between ourselves however, Franklin, I think all this paper work is tiresome and senseless."

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" You're wrong, sir," Franklin disagreed. " No big organisation can be run without rules and procedures and written records. The rules should be good rules, and flexible, and characters like myself mustn't get around to believing they exist for their own sake."

" Don't go yet, Franklin," Mangani invited. Mangani was a man who meant to be famous, but he did more than merely dream of his future; he prepared for it; he interested himself in men, in character, in problems of organisation, in the difficulties concerned with leadership. Seeing now that in Franklin he had an honest intelligent young man, he set about learning his point of view.

After this Mangani got the habit of asking Franklin's advice on supply matters, and as a result, the latter more and more frequently made visits down to the Special Project hangar.

Dr. Towster worked in a little office adjoining Colonel Mangani's. He had a large and not entirely clean piece of drawing paper pinned to a desk. The paper was covered with a network of squares with figures pencilled in at the corners of each. Also on the desk was a battered old-fashioned computor and a pile of foolscap covered with calculations.

Once, when Franklin was rash enough to ask him what it was all about, Towster explained. He said he was doing a stress-distribution analysis. He said that unfortunately the job could only be done laboriously by a series of successive approximations; he remarked, complainingly, that if the U.N. Government had not closed down on the project he would have had a team of eager-beaver youngsters on the job. Franklin managed to grasp the fact that the stresses which interested Towster were not really everyday stresses such as are induced in steel structures, for example, but stresses in space—beyond that point the explanation soared out of his reach.

" I never understood why U.N. closed the project down this way after the space-warp principle, or whatever you call it, had been proved to be a reality," Franklin said. " After all, many initial trials are unsuccessful or even disastrous. Weren't the first four ships sent out here to the Moon lost?"

" This situation's different," Towster told him. " The space-warp device can't be tried out on a model, or even on a radio remote-controlled space-craft. You've got to fit it onto a ship, put two or three men into it, get them to blast off

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a thousand miles or so into space by normal jet, then have them press the button. And it isn't possible to press the button half-way; you must either press it all the way, or leave it alone. This has been done just once, and neither ship nor men have been seen since the moment the skipper leaned on the button. They haven't come back to tell us what went wrong; there aren't even any bits and pieces which can be examined. We could go on fitting ships out with the device and then inviting volunteers to go out in them and press the button from now till hereafter without getting any wiser."

"So nobody knows what's wrong?"

"The U.N. panel of scientists engaged to advise on the Project think they do. It's like this: the space-warp device twists the section of space immediately around the ship so it falls downwards—or forwards or upwards or back, if you like—the words don't have any meaning. But once started there's no means of altering or controlling the direction in which it falls. I don't believe it will be possible for the crew even to see any stars in order to estimate direction. Anyway, the direction of motion depends on the kind of twist that's given to the section of space surrounding the ship."

"Can't the twist be calculated?" Franklin interrupted.

"Oh, yes, that's what I'm doing now." Franklin waved his hand around the drawing-board. "But the answer depends on the shape and mass of the ship. Any imperfection in construction by which the real shape differs from the theoretical design will displace the centre of mass and alter the twist. Why," he tapped Franklin on the chest with his pencil, "if one of the crew walked across the ship, its mass-disposition would be so much affected as to throw everything haywire. I believe even a mouse running across the floor would be more than enough to divert the course of the ship quite disastrously."

"What would happen?"

"In five minutes the warp will whisk you to another corner of the galaxy; when you switch off you won't know where you are, so you won't be able to calculate the way back, and even if you did, the ship wouldn't travel in the direction you aim her. It's all very tiresome."

"It sounds worse than that to me," Franklin admitted.

"So the U.N. Scientific Committee shelved the project. They agreed the space-warp was a real physical effect all right, but that it was uncontrollable and unmanageable, and without practical application—like lightning for example."

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"It seems a weak and footling sort of decision for modern men to make."

"The fact is," Towster told him, "this sort of work costs an incredible amount of money, and there's no profit in it for the ordinary citizen back down on Earth. Bring back a film or two occasionally of development work on Mars and some shots of exploration parties out on the Moons of Jupiter for thrills, and that's enough to make most people feel humanity's going places fast enough. Anything more and he begins to grouse about the cost, and to ask where's the pay-off . . ."

"But the U.N. hasn't closed the project down altogether, Colonel Mangani and yourself are carrying on—where's the logic of that?"

"I told the committee I had the glimmerings of an idea, and Mangani was crazy enough to take a chance with me. So we're allowed to continue on a very restricted budget for a short while. Of course, it was really Percy who did the trick. I believe quite a few of our elder statesmen—the more intelligent ones, that is—devote a considerable proportion of their spare time worrying about Percy."

"Percy?" Franklin asked, in tones of acute curiosity.

"I can't tell you about Percy; he's top secret." Towster shook his head. "But it's chiefly due to him the U.N. Committee didn't close the project down completely. That's why Mangani and I feel pretty grateful to Percy."

"This idea you've got," Franklin asked, "is it the sort of thing you can explain to me, or is it mathematics?"

"It's quite a straightforward idea," Towster told him. "When this space-warp thing's switched on nothing in ordinary space can be seen—or at any rate, our calculations suggest that this is so. In other words, the ship's blind. But if we can make the space-stress-field flicker on and off very rapidly we'll be able to look out and get a steady picture of normal space. The persistence of vision effect, just as with cine film. Then during the other half of each flicker the ship will be in the space-warp, moving forward at the rate of say twenty miles per flick. The net result will be—if it works—normal vision from the ship's ports, while the ship itself screams across the universe at—well, it might be as much as 300,000 miles a minute. Is that fast enough for you?"

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"It'll do," Franklin agreed. "That way you see where you're going. But still you can't control your direction."

"I've got an answer to that too," Towster told him. Franklin had the impression that he was not too happy about the answer. "I simply get a ruddy great ball of brass and fix it on guides so it can be moved inside the ship in every direction —up, down, forward, back and sideways. That way I alter the position of the ship's C.G. and that in turn alters the space-warp field stresses. I fix the thing so it can be controlled by a joy-stick in front of the pilot. Hence we get positive directional control."

Franklin had expected to be told of some extremely complex electro-gravitic device. "Seems O.K. Simple enough," he agreed doubtfully.

"That's the way I feel," Towster nodded. "Too damn simple to work. But my chief worry is concerned with this on-off flicker of the space-warp. The space-stress is generated in the electro-gravitic condensers and spreads outwards from them till it encloses the whole ship. Of course, its rate of spread is enormously fast, but it does take a finite time. You see what that means, don't you?"

Franklin didn't—not in the very least, and said so.

"At any instant part of the ship, and its contents, are within the field, being flicked forward in space, while the rest isn't. At some instant, for instance, your head might be in and the rest of you out. So one flicker might spread the ship and its occupants out in a thin streak about twenty miles long. But on the other hand, I can produce arguments to prove the ship and its bits and pieces might stick together. The chances as I see them are about fifty-fifty both ways."

"So how are you going to find out?" Franklin asked.

"In the present circumstances with the threat of closing down the unit, and lack of time and lack of research facilities there's only one way. In order to find out we've got to get into the ship and try it."

"And take a chance of becoming a long thin smear in space?"

"Exactly."

"Why take the chance? I'm no scientist, but I'm sure that given time some means of making a trial without taking this risk could be found."

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Towster lit himself a cigarette. "True enough," he agreed, "but there isn't time. No mere report containing suggestions and calculations is enough at this stage to convince the committee—they've got to have results. Besides," Towster grinned at Franklin, "either I'm just a fat-boy second-rate scientist who can't even keep his wife—I suppose you know I'm divorced?—or I'm a genius. And I want to find out. These ideas are all my own. They're the best I know. This is the finest chance I'll ever have to prove myself. If I pass it up, I'll probably spend the rest of my life working out stress calculations on a computor. So I'm staying with the job."

"When d'you try it out?"

"In about ten days time."

Franklin rose, picked up his cap and walked towards the door. Then he turned back.

"I'd very much like to go along on this test," he said. "I'm sure you'll need an instrument watcher, or a button pusher, or even a coffee brewer. If so, I hereby volunteer for the position."

Towster looked at him. "Application rejected," he said. "I have sufficient reasons for taking the risk. So has Mangani. But you're just being romantically heroic."

"I have reasons," Franklin objected quietly. "Reasons of a sort."

"This girl?" Towster guessed.

"Yes," Franklin admitted. "This girl. I had a letter from her yesterday. Do you realise that being at opposite ends of the solar system we don't even get letters from each other very often—and it might be ten years before we can meet? I can't get off the Moon without resigning my commission and if I do my back pay will be seized as cost of transportation home—and even if I got back I can't afford to go out to Mars."

"I'm sorry about all this, son," Towster told him, "but I don't see that risking your life in our ship is going to improve your situation."

"If your trials succeed, your Development Section will expand. Colonel Mangani will need more staff; he can reasonably ask for me if I've taken part in this trial as a volunteer. It gets me out of Underwood's clutches. Then after a while I might ask him to fix me a posting . . ."

"I agree with all that," Towster admitted. "But Mangani'd do it just the same even if you didn't come along on the trials."

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" Don't you see," Franklin insisted stubbornly, " if I come along with you, I'm on the inside. I'll have had specialist experience. I might even transfer and become navigator-pilot in one of your new warp-drive ships."

" I begin to follow the general direction of your youthful dreams," Towster told him. " And if the test fails ?"

" I contribute an additional quantity of molecules to the twenty-mile long smear in space you mentioned."

" And your girl is released from the ordeal of a ten-year wait. I see. Well, Franklin, you've got a case. Mangani and I are risking our lives to get something we want, and to my mind your ambition is just as valid as ours. I'll talk to Mangani for you, though I don't feel he's likely to agree."

The next time Franklin met Dr. Towster, however, the latter told him that Mangani had agreed.

" We certainly need a third man along," Towster said. " Anyone at all who can do odd jobs about the place like reading dials and holding things. In the ordinary course of events we'd have asked for a volunteer from among our men, but your application's accepted. We'll do the trials in about a week's time. Mangani says if you really mean to come, keep quiet about it, and be ready to apply for four days' leave just in case you have to spend some time hanging around our Section. It'll put you in the clear with Underwood."

Franklin experienced an indescribable mixture of emotions, consisting fifty per cent of a thrill of excitement at having wangled himself into taking part in what might be an historical occasion, satisfaction at the prospect of extricating himself from his present position, and deadly clammy fear of the dangers he had talked himself into. He stammered his thanks.

" Having done this much for you," Towster continued, " I feel I must say as strongly as I can that you'll be a fool if you come. You see, as a third man you're obviously not so much use to us as a senior technician, and for that reason I thought Mangani would turn you down flat. As a matter of fact, he did at first; then about ten minutes later he came through into my room and said he'd changed his mind. Said one honest-to-goodness enthusiastic volunteer was best, even if he didn't know anything about electro-technics. It means Mangani's up to something—something that involves you. I suspect he's got some publicity stunt in mind, and you're part of it. So think it over."

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"I'm coming, just the same," Franklin said. "I'm so damn scared that if I withdrew now, I'll spend all the rest of my life wondering whether I drew back because I was scared."

"Very well, son," Towster told him. "Come if you must. And as to being scared, you can't be half as scared as I am. Anyway, it'll be an extremely instantaneous and painless death."

"I'll come," Franklin assured him. "And before we go," he continued, in an attempt to regain a lighter mood, "I think I'm entitled to know who Percy is."

"Percy's top secret," Towster said solemnly. "But maybe Mangani'll tell you."

It would have been much easier for Franklin if the trials had been due to take place immediately. It would have been easier if the job had been an official duty, as it was with Mangani, which he could not evade without loss of face. As it was, however, he had a week to wait; a week in which to call himself a fool, a week in which to remind himself that he was young, that life was sweet, that there were other women around besides the long-legged lanky young thing he spent his days dreaming about. To escape from this ordeal he need only say one word to Mangani, or not even that—simply get himself a week's leave and stay out of sight at Moon City. But Franklin, though he lay awake most nights dreading the ordeal that faced him, was made of good stubborn material.

At the end of a week, his phone rang.

"Mangani," a voice said. "We're doing the trial sometime tomorrow. One of my electro-technicians has volunteered to come along. He's very keen. I wonder if you'd care to drop out in his favour?"

Franklin recognised that Mangani was offering him a get-out.

"Well," he said, then he found he had to clear his throat. "I'm still keen to come if you'll have me."

"Good for you," Mangani replied, with considerable warmth. "Then get yourself a four-day leave, just so that Underwood can't shoot you down, and come round here. You may have to do some pretty tedious hanging about before blast-off."

When Franklin got round to the Special Project hangar, he was surprised to see no ship. The floor was quite clear; then he realised it must already have been manoeuvred out into

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the exit tunnel which sloped upwards to the Moon's surface. Towster and Mangani were in the latter's office.

"Come in, young Franklin," Mangani called. He was gayer, more exuberantly excited than Franklin had ever seen him.

"The techs are giving the works a final check and while they do so, the condemned men are about to eat a hearty meal. We've had one sent up for you. Come and join us."

Franklin sat down with them. The cards had been dealt; he was committed to this thing without any chance of honourable retreat, and so for the moment at any rate he felt calm, happy and excited. Mangani and Towster spoke to him as a comrade in a hazardous enterprise.

"Can you tell me who Percy is?" he asked presently.

"I think," Mangani replied, not too seriously, "that in view of the special duties you've volunteered to do, we can include you in our approved category. Don't you think so, Towster?"

"I think so," Towster agreed.

Mangani rose, went to a filing cupboard, unlocked it and took out a piece of stiff card about nine inches square.

"That's Percy," he said, and flipped the card across the table to Franklin.

It was a photograph—a photograph of a vertical rock face, taken in strong direct lighting. Carved on the rock, in bold relief, was the head and shoulders of an eagle. At least, it looked like an eagle at first glance, but this eagle had a big head, a strong thick neck, and broad shoulders. Moreover, it had something like a metal helmet fitted over its head. It had a strong cruel beak and little small hard eyes.

"Unpleasant fellow," Franklin remarked, and looked at Mangani for explanations.

"That carving was found on a rock face round the other side of the Moon. It wasn't carved by humans. It was carved quite recently, certainly within the last hundred years. And Percy here wasn't born and reared in our solar system. He came from Across."

Franklin gazed at the photograph, fascinated. A creature from another system.

"Percy is the reason why U.N. started the Special Project, and spent millions a year on it for ten years. There are some people in U.N. who feel very strongly that we humans should be able to meet Percy on equal terms next time he pays a visit

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to our system. So Percy has meant jobs for myself and Towster, and others."

"Mangani dreams of leading space-fleets into battle against Percy," Towster added. "If anyone came along this minute and proved that Percy was a myth, he'd burst into tears. Of course, that expression on Percy's face may not mean a thing; he may be entirely benevolent."

"He doesn't look it," Franklin commented.

For some time past, for some weeks in fact, events had dragged slowly on for Franklin, but now, almost as soon as they had drunk their customary toast, everything seemed to speed up towards a climax.

A Tech Sergeant put his head round the door and nodded.

"Well, men," Mangani said. "this is it."

They walked across the hangar floor. Men were helping Franklin into his pressure suit, and explaining complicated details about its use—details which he quite failed to understand. They were climbing in through the small port of the ship as it lay in the exit tunnel, Mangani first, expertly, then Towster more clumsily, and finally himself. They were lying very close together in a small compartment crowded with cables, dials, meters, switches and banks of coloured lights.

On the intercom—there must have been some sort of intercom built into his suit—he heard Mangani speak to the techs outside.

"All the bits and pieces screwed on, Sergeant?" he asked.

"More or less, sir, most of them," the sergeant's voice came back.

"Then wheel us out."

The ship, pulled by an invisible tractor, began to rumble up along the tunnel. After a while, it halted. Franklin knew it had been pulled into the air lock, that the inner door was being closed, and that the outer would be opened after the air in the lock had been reclaimed.

The tractor pulled them forward again, upwards. Then suddenly a shaft of sunlight struck in through the dome. They were out on the surface. Looking over Mangani's shoulder he could see the big powerful tractor ahead. They lurched and rolled across the dust-plain for half an hour.

Then the tractor unhitched itself, swung round and disappeared from view. Mangani spoke an order, and Franklin felt the cushioned floor of the cabin begin to tilt upwards;

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the tilt increased until it was as much as sixty degrees, then stopped. Motors hummed and clucked in the bowels of the ship and Mangani from time to time exchanged short cryptic sentences over the radio with some control point.

Unexpectedly, while Franklin's attention had been diverted to trying to identify a bright star which lay just below the nose of the ship, there was a rumble of noise which rose to a bellow, and it was as if a giant hand took him up and flung him off the surface of the Moon right out into space.

Almost immediately Mangani cut the jets down to cruising thrust, and they continued in this manner for about half an hour, by which time they were well away from the Moon and moving at considerable speed.

Mangani spent ten minutes jockeying the ship round on the auxiliary jets, as if to get it lined up in some particular direction. Then he cut the jets altogether. Thrust-gravity vanished. and the three men floated free. Mangani's hand moved over the controls. As he clicked over the switches all the small sounds that had existed within the ship, the whine of the gyros, the hum of pumps, the click of relays died. In the end the silence within the ship was complete. Mangani spoke on the radio.

" We're now in position and ready to make the test. All normal power is off. The ship is deader than mutton. I'm starting up the electro-grav generator now." As he spoke he moved a big knife contact down. " I'll switch on the warp in about two minutes, after which I don't suppose you'll hear from us—not for some time at least. Over."

A voice replied, and for the first time Franklin paid attention to it. " Have a nice time," the voice said. " They say the dames out on Betelgeuse are wonderful ! Good luck !"

" Well, men," Mangani told them, " here we go."

He moved his position. He had a stick, exactly like the joystick of a light aircraft, in front of him. He looked round at Franklin and grinned.

" Scared ?" he asked.

" Scared as hell," Franklin admitted.

" Me, too," Mangani admitted.

" For heaven's sake, cut the back chat and get on with it, Mangani," Towster's voice wavered up and down several octaves.

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" Very well," he extended his arm and grasped a long lever. " The stars or bust." He wrenched the lever fiercely downwards.

Instantly the ship bucked as if kicked by a cosmic mule. It continued to buck and swerve and jerk in the most sickening fashion. A small gravitational field was imposed on the ship —Franklin had not expected this—and so he was tossed about on the cushioned floor like a pea on a drum.

" Can't you b—— well control her better ? This is hellish," Towster shouted.

" I'm trying," Mangani replied. His voice was wild with triumph. " But don't complain—you're still alive ! Or hadn't you noticed ?"

" Death will come as a relief if this keeps up much longer."

Franklin in the midst of the tossing, managed to take a look outside. The familiar stars were still there, flicking wildly back and forth and up and down as Mangani wrestled with the controls. Nothing had changed. He gritted his teeth, clutched hold of something on the floor and tried not to be sick.

Without any warning the bucking stopped. He floated comfortably and quietly about six inches off the floor.

" What's the trouble, Joe ?" Towster demanded anxiously. This was the first time he had ever called Mangani by his first name.

" Not a thing. Not a single thing," Mangani replied. " I want a position fix. I couldn't do a thing about it while I was riding this bucking steer."

" I guess that moving mass we fixed to give directional control is just a little unmanageable," Towster explained. " But it worked ! It worked ! We're still alive."

" We're alive," Franklin agreed. " But I wonder where." His voice grew a little anxious. " Maybe we're on the far side of Antares."

" Don't be a clot," Mangani told him. " The star pattern hasn't changed." He was setting up a sort of three-armed sextant in the nose bubble. The other two waited eagerly. Neither the Earth nor the Moon was visible to them, but of course the nose bubble was small and their range of vision restricted.

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" Guess," Mangani said at last. There was a ring of triumph in his voice. " We were using the warp for just under six minutes. Guess what distance we covered."

" Oh," Franklin said, " two thousand perhaps ?"

" I have an idea what it ought to be theoretically," Towster said, " but I won't believe it even if your figure matches."

" This is a very rough measurement," Mangani told them slowly, " but we've shifted two point six-three million miles in five point eight-nine minutes."

There was a long silence.

Towster heaved an immense sigh. " It should have been four point five million," he complained.

" It seems good enough to me," Franklin commented. " In fact, I feel sure my grandmother would say it was faster than nature intended us to travel. Give me the good old railway train, she always used to say." He was very slightly hysterical.

They talked excitedly about it for ten minutes. Even Mangani laughed and joked like a boy.

" Well now," Towster said, " let's go right back and tell the cock-eyed world. Then I suppose we must spend our time trying to smooth out the ride. A question of trial and error with different weights and different leverages on the control. Yes, let's get back."

" We're not going back," Mangani announced.

The other two looked at him in alarm. He had removed his helmet. His black hair was rumpled, his dark eyes glittered with excitement.

" You gone crazy, Mangani ?" Towster asked with sudden seriousness.

" Not more so than usual," Mangani grinned. " D'you know what happens when we get back ? We tell the tale. We put in reports. Then a lot of people don't believe us; they'll think we're trying to keep ourselves in business. Then, maybe after we've done a few demonstrations, somebody begins to think."

" I know," Towster agreed, " but given time . . ."

" I haven't got time," Mangani flashed back at him. "And think what could happen even after we've convinced the brass-hats. They'll start moving in on us. They'll take over. One of them will get himself appointed Project Director. It'll cease to be our business alone—I might be retained as test pilot and you as computor operator."

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" It's a cruel universe, and such things frequently happen," Towster admitted. " But what else is there to do ? If we drive out to Centaurus and try to sell the idea there, as like as not the locals will treat us just the same. They might do worse. They might eat us."

" I'm not planning to do anything as drastic as that," Mangani grinned. " I'm just going out as far as Mars. That'll be proof enough for everybody. It'll blow the roof off."

" It takes something like fourteen months to get out to Mars," Franklin objected.

" It used to," Mangani flashed at him. " It'll take us about four hours."

" Crossing the Atlantic in a rowing-boat is nothing to this," Towster muttered. " And what do we get by it ?"

" What do we get ? We get publicity, instead of going back to Moon Base and writing a report which a lot of people won't believe. Listen Towster, they get about one ship a month from Earth to Mars. Earth ships are big news out there. Even the children know the Captain's names. The monthly ship is the big event in the lives of these exiles. So imagine what a stir our arrival will cause ! The Mars colonists will make our publicity for us all right. And of course we'll have to make further trial trips after this one. And on each one we can take mail and news—hot news, only a few hours old. No sir, I'm not letting this thing slip out of my grasp." Mangani was talking as excitedly as a boy now. " I'm playing it for all its worth."

" Mars !" Franklin exclaimed. " That's a wonderful idea, sir. I'm with you, even although I'm convinced now that I'm just another card to be played in your publicity scheme," he observed.

Mangani gave him a brilliant glance. " I won't deny it," he said. " You know the governor, don't you ? Or at least, you know the governor's daughter. And you may provide that flavour of romance the whole of humanity loves. Get it into your heads, men, that in a few days, after the news has been radioed back to Earth, we'll be the sensation of the year !"

" So we're going to Mars," Towster grumbled. " I suppose there's no stopping you."

" You're dead right, Towster, my dear old pal," Mangani told him. " And if you don't want to come along, you'll

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have to get out and walk. So hold on to something, for it's going to be a rough trip."

It was like a dream—or perhaps a nightmare. In the course of four terrible hours their ship like a mad magic carpet transferred them from one corner of the solar system to another.

They approached Phobos, the larger moon of Mars, on their atomic jet, and made a standard touch-down within two miles of the space terminus there.

Like a man in a dream, Franklin fastened his helmet and followed his two friends down the side of the ship and across the knobbly outcrops of rock that formed the surface of Phobos towards the dome of the station. The outer door of the lock opened to admit them, then closed after they had passed inside. Air rushed into the chamber; the inner door swung ponderously open, and they passed into the station, unfastening their helmets as they went.

A remarkable sight greeted them. One officer of the space service, and five men stood in the entrance hall, each holding a sub-machine gun. The guns were pointed steadily, ominously at the newcomers.

"Who the hell are you?" the officer demanded.

Mangani was magnificent. Till now there had been something of the charlatan about him; he had been nothing more than a man who dreamed of making a great name for himself. But now his future and his fame were in his hands.

"Colonel Mangani, U.N. Space Service," he announced briskly. "Officer i c Special Project Moon Base. Calling here in course of ship-performance trials."

"But . . . But we got no word you were on the way," the officer protested. "And that ship out there—don't tell me you came across in that little piece of tin-ware?"

"Indeed we did," Mangani told him, then asked, smiling, "Did you think we were aliens from outer space?"

"You might have been," the other confessed. "You appeared quite suddenly from nowhere and we've no previous record of unscheduled arrivals. How long has your voyage lasted?"

This was Mangani's moment. "Four hours and three-quarters—"

The rest was a babble of questions, answers, explanations, laughter, drinks, a celebration meal, more drinks, news from home, still more drinks.

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"Colonel, sir," one man asked presently, "I'm Administrative Officer here, and I take care of public relations and news releases—that sort of thing. I pass down items of public interest to Mars City. Now, this is the biggest thing to hit Mars since colonisation started. It brings us within a few hours of Earth. It changes our whole outlook. Can I let it loose?"

Mangani pretended to consider. "I have no instructions to keep it secret, and in any event," he concluded judicially, "it's too big a thing to clamp down on. Yes, let it go. By the way, Captain Evans," he turned to the Commander of the station, "I must send Franklin down to Mars City presently. I have a message for the governor, and I'm going to offer to take back mail. I expect you can give him a place in the next rocket down?"

Trips on the rocket were not as a rule allocated in such casual fashion, but Mangani in his present mood was difficult to refuse, and the Station Commander was feeling more than a little bewildered. He already had a picture in his mind of this lonely station in the sky developing into a terminus as busy as King's Cross Station.

"I guess I can arrange it," he agreed. "Franklin will have to wait a matter of four days before return, though."

"Oh, I reckon Franklin will find some way of passing the time, won't you, Franklin?" Mangani winked.

"I reckon so," Franklin agreed, grinning.

Alan Barclay

'Gone Away—No known address'

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This column's absence for several issues has been regretfully occasioned by the sharp decline in hardcover fantasy books published over several months. With the near cessation of reprints from America and stereotyped series from publishers who had jumped in with both feet and found the boom's-end too precarious for science-fictional adventuring, it remains for the more reputable houses—who shun the tag " science-fiction " for what must be depressing reasons for the enthusiast reader—to present occasional novels with a science-fictional content for their general lists. Even in the U.S.A. only a few publishers—including Ballantine, Doubleday, Gnome and the new Avalon Books—are regularly producing hard-cover science-fiction, although the magazine field there seems to be enjoying a minor boom at the moment—but all too often with the same old unfortunate results.

In the midst of this somewhat depressing vista it is with a great deal of jubilation that I can now strongly recommend a new novel which has done considerably more to recapture my old " sense of wonder " from reading in this genre than any other two books put together from the procession of gloomy catastrophe or menace themes which tend to pall in concentration no matter how well written. In **The Deep Range** by Arthur C. Clarke (Frederick Muller, 13/6d) the author once again sugarcoats his pill of science, but he writes oh ! so well now, and with such an ease of interpreting highly imaginative concepts into compelling realism, that I am tempted to hail this new book as his best novel to date. The theme, for once, deserves the description ' original ' for apart from an earlier Clarke short story (from which this book is extended), I cannot recall a story which has done more then mention in passing the possibilities of the vast undeveloped resources of our oceans being tapped for Man's larders. In true Clarkian (as in Wellsian !) manner, a whole new concept of marine farming and food synthesis is laid down in logical and enthralling detail—from its plankton farms and herds of whales

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to the undersea Wardens who are the future Riders of the Range. The setting is a peaceful world state in the not too distant future, and the main theme concerns the rehabilitation of a successful space man who suffers a traumatic shock in an accident and is being retrained for a career in a completely different field of enterprise—the organised cultivation and protection of the seas' enormous resources. The undersea excitements are vividly and thrillingly drawn, and the central character's personal complications are realistically portrayed. The author's own experiences beneath the Great Barrier Reef (as told in his book *The Coast of Coral*) lend authenticity to the awesome activity of the ocean deeps and the attendant great creatures. Don't fail to read this one.

A major event in novel publishing is a new work by Nevil Shute. In his **On the Beach** (Heinemann, 15/-) he once more attempts a fantasy of the future—but even apart from the aridity of theme in this direction, here I feel is a case of a successfully established novelist attempting to produce a best-seller solely be reflex-action on the part of his mesmerised followers. From the fantasy point of view, the plot is the well-worn world catastrophe—atomic war of such fierce concentration that the poisonous fall-out has already wiped out all life in the Northern Hemisphere. Now it is well known that Mr. Shute has long been a rabid Australiophile (whatever the word should be) and was quite recently vituperously attacked in print for his rather blatant antipathy towards most things and people not Australian. Here in this book he has created a situation beautifully suited to his hobby-horse, for Australia (and incidentally the Souths of America and Africa) is succumbing slowly to the creeping invisible death, and we are shown how the Australians, and in particular a handful of competently stock Shute characters, react to the last few months of their lives. Now—and this is a purely personal opinion, but on each individual viewpoint depends the success of the story—I found the serene, brave, stiff-upper-lip and carry-on-as-usual-despite-certain-hardships attitude to be completely nonsensical, in my own interpretation of the situation. I just do not believe that this would happen in such circumstances. Or perhaps it is because I am ignorant of some especial sterling Australian quality, and because of this, the book containing very little else of interest apart from an expedition to the N. American coast to trace the source of strange radio signals, I found to be tedious in the extreme.

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On the other hand Harold Mead's newest novel **Mary's Country** (Michael Joseph, 13/6d) treats an equally difficult subject with an unecpected and welcome competence. He postulates an indeterminate future wherein a Totalitarian State and a Democratic Union are fighting a cold war. The Guardians, ruling class of the "Totes" maintain Central Nurseries for the breeding of their future leaders, and it is the story of a handful of these children which is unfolded with such credible suspense. Their city is devastated by sneak germ-warfare, and they are forced to leave their sheltered and directed existence and lead a savage life in the countryside, facing danger from the remnants of the lower class People, whose survivors are immunes like themselves. Four young girls and four young boys, searching for a haven, hazily envisioned by Mary, the eldest child, but as yet a dream goal to be fought for by unaccustomed violence and hardship. Then they are captured by the invading "Dems" and as accused war-criminals become the focal point for controversy before an ironical twist of fate blows the whole scheme sky-high and Mary and her friends find at last her Country. A very fine piece of story-telling indeed.

With the recent inspiring news of the first successful artificial satellite, a more propitious book than **The Making Of A Moon** by Arthur C. Clarke (Frederick Muller, 21/-) published a week before the news was released) could hardly be imagined. Although scooped rather by Patrick Moore's earlier *Earth Satellite* which was timed for the IGY's opening publicity, and being followed very closely by Werner Buedeler's *Operation Vanguard*, the astute Mr. Clarke goes one better with a detailed description, fully illustrated, of the actual Vanguard earth satellite which the Americans are hoping to launch soon. It is the perfect handbook for the layman who is wondering why an artificial satellite should be built, what possible peaceful scientific purpose it can have, how it is built and why it costs so much, how it gets 'up there' (and stays there for a short duration) and what further developments may be expected. I like Clarke's analogies and his frequent illustrative points—such as the greater vulnerability of a satellite to a charge of buckshot placed anywhere in its path, than a nuclear bomb! Couched in easy-to-follow language and with Clarke's facile and descriptive writing I found it a most valuable help in understanding the present projects, and fascinating reading in

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the bargain. However it seems an ironic commentary on the internationalism of the IGY activities that Clarke relies on purely American developments for his story (where is Britain in this effort ?) and that the first satellite up should be Russian !

It is an obvious, if sorry fact, that science-fiction (in its interplanetary aspect conjured in the minds of most of the public) is receding in popularity as science-fact (in its extra-terrestrial aspect publicised by the popular press) comes into prominence. The International Geophysical Year and its attendant activities, the echoes of the flying saucer tumultuation, the bright new comet in the summer sky—all these have helped to arouse more general interest in the cosmic scene and the nearer horizons beyond the Earth itself. Among the profusion of specialist books on the various sciences has arisen, therefore, the need for a popular encyclopaedic work to cover the present interest, a concise but practical reference book for those who have neither the finance nor the necessary endeavour for Encyclopaedia Britannica.

This gap has now been admirably filled by **The Space Encyclopaedia,** published by the Artemis Press at a modest 35/-. It covers all aspects of space research and astronomy from A - Z. The references span simple explanations of terms like Angular Velocity, Free Fall, G Layer, etc., to longer accounts for items like Galactic Nebulae, Orbital Refuelling, Theory of Relativity, etc. There are fuller guides to subjects such as Artificial Earth Satellite, Spectroscopy, the Solar System, and individual planets. In addition the articles under such headings as Astronomy, Cosmology, Radio Astronomy, Guided Missiles, Rocketry, etc., can be recommended as general introductions to those topics. The book is copiously illustrated, both with excellent photographs and useful diagrams and tables, and will make a valuable addition to your reference shelf.

A new non-fictional book is worthy of attention in this International Geophysical Year with its tantalisingly imminent approach of practical space travel. Particularly as **Space Research and Exploration** (Eyre & Spottiswoode, 25/-) is a symposium edited by Prof. D. R. Bates, of contributions on allied space subjects by a round dozen of experts. Following a concise but informative introduction by the ubiquitous Arthur C. Clarke, and a brief history of the field by P. E.

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Cleator, the problems of rockets, their propellants, the upper atmosphere, cosmic radiation, meteor hazards, artificial earth satellites, manned space stations, interplanetary astronautics, space medicine, the Moon and the nearer planets, are systematically explored. It is an ideal overall handbook for the intelligent layman interested in the practical aspects of space travel, and it is profusely diagrammed, with suitable appendices for the more mathematically minded. Highly recommended.

From America I have received for review a copy of a unique book called **In Search of Wonder**—Essays on Modern Science Fiction, by Damon Knight (Advent: Publishers, Chicago, $4.00).* For the benefit of the unworldly, Damon Knight is a young, American, and brilliantly individualistic author of science fiction short stories which since the early '50's have sparkled against the generally drab mediocrity of the magazine boom; of one controversial novel "Hell's Pavement"

Continued on page 128

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published in pocket book format in the U.S.A. only; and of dozens of the most acutely discerning, disconcertingly astute and devastatingly critical analyses (collected in this present volume) ever to be read with mute respect by a mere *reviewer* like myself. Anthony Boucher in his notable introduction puts the matter in a nutshell where he says " . . . you can disagree completely (with Knight) on the book in question, and still admire . . . the technique." I must admit myself to be like the man who watches a surgeon at work, admiring the skill, but probably fainting at the sight of the blood, and definitely feeling sorry for the patient. The surgeon's work is healing and good, but the manner in which the scalpel removes the malignant parts is unpleasant. And so with the hundred or more books discussed herein which receive the axe or the accolade; the famous author-names in the stf. field and outside, the treatment they receive at the pen of Mr. Knight may embitter or please, according to your own opinion. But stay that incipient tear for the patients that died on the operating table, for Knight, like the surgeon, is so damnably convincing and so able to back himself with his own brilliant writing technique.

So I simply refuse to review such a book, and beg of you all to beg, borrow or buy this wonderful book, to *read* it and wonder. Do not miss it !

Leslie Flood

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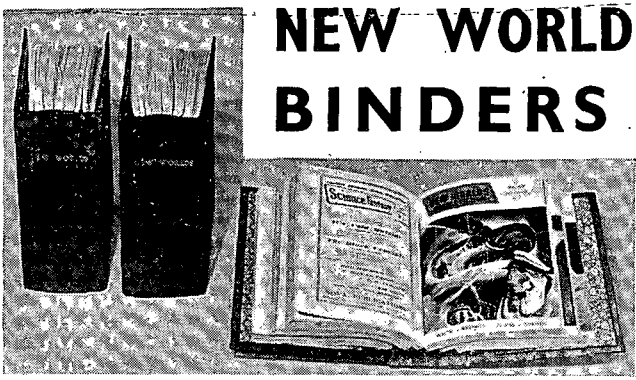

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